

Practical Helps

FOR FARM AND HOME

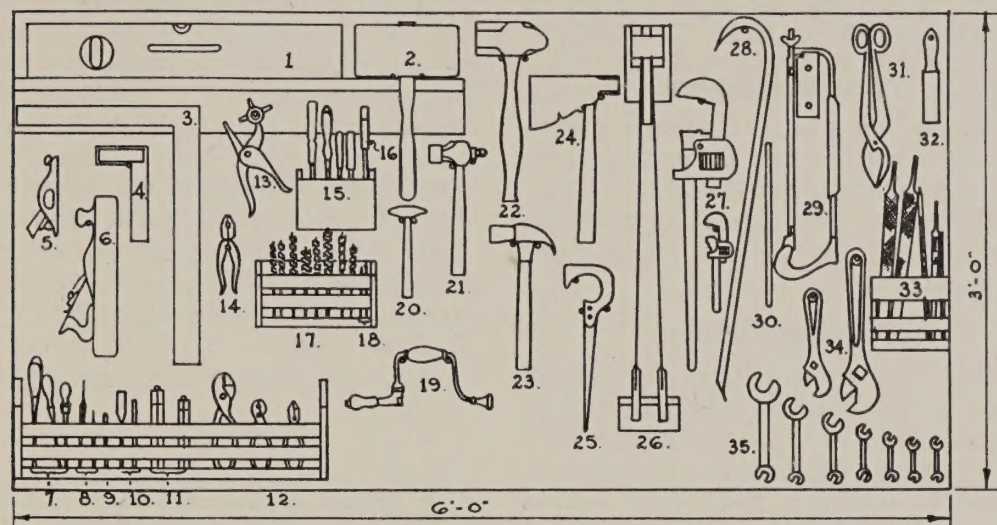


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FARM MECHANICS SECTION

Tool Panel Saves Time—Encourages Better Care



One method of encouraging the return of tools to their proper places is to have a definite place for them. A tool panel, such as the one illustrated here, is suggested by Purdue University. A red picture of the tool, painted in the proper place on the panel, tells exactly what tools may be missing and also serves as a guide when replacing them. A key to the numbers of the tools shown on the panel follows:

1. Level
2. Mallet
3. Steel square
4. Tri-square
5. Block plane
6. Jack plane
7. Screw drivers
8. Drift punches
9. Center punches
10. Cold chisels
11. Rules
12. Pliers
13. Leather punch
14. Electrician pliers
15. Wood chisels
16. Automatic drill
17. Auger bits
18. Nail sets
19. Brace
20. Tack hammer
21. Machinist hammer
22. Five-pound hammer
23. Claw hammer
24. Hatchet
25. Compass saw
26. Saws
27. Pipe wrenches

28. Wrecking bar
29. Hack saw
30. Blades (Hack saw)
31. Tin snips
32. File cleaner
33. Files
34. Crescent wrenches
35. End wrenches

Other desirable tools for the farm workshop (not illustrated here) would include the following:

- Bench screw or "C" clamp
- Compass (dividers)
- Drawing knife
- Grindstone
- Oil can
- Scratch awl
- Tape line—50 feet steel or cloth
- Vise—4-inch jaw or larger
- Whetstone
- Wire splicer
- Wrench (monkey) 8-inch
- Wrench (monkey) 15-inch
- Drill press (blacksmith's post)
- Drills—a set of 12 varying from $\frac{1}{8}$ in. to $\frac{13}{16}$ in.
- Forge
- Hoisting block ($\frac{1}{2}$ -inch rope)
- Jackscrew (10-ton capacity)
- Tongs
- Set of taps and dies for bolts (machine thread)
- Blow torch
- Soldering irons (pair)
- Socket wrenches
- Anvil, 100 lbs. (Steel-face cast anvil)

(Reprinted from Purdue University Extension Bulletin 289)

Care of Idle Machinery

The watchword of the farmer in regard to his machinery should be "Good machinery, properly oiled, repaired, adjusted, and well housed."

When a machine is left standing for a short period, the working parts that are likely to be damaged by rust should be greased or covered. At the end of the season, whether a machine is to be housed or not, it should be thoroughly cleaned and all the bearings and bright surfaces oiled or greased.

Before putting a machine away, go over it carefully for broken or badly worn parts, tag them, and order the new parts at once.

Machinery to be properly housed must be placed on a floor or on boards in a closed, dry shed to which stock does not have access. Unfortunately, housing often means merely putting machinery in an open, leaky shed with a dirt floor, where it serves as a chicken roost. It would be just as well off standing out in the open. Some machinery, however, can be stored outside if properly cared for. Corn cultivators, disks, drag harrows, and even plows can be left outside if the polished parts that can be taken off are removed and put in a dry place, the other polished parts greased, and the rest of the machine given a coat of paint when it is needed.

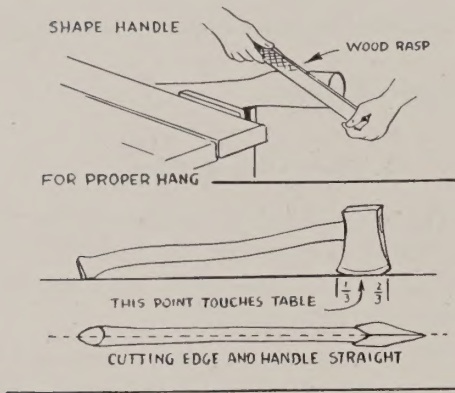
Investigations from several states indicate that the life of farm machinery is practically doubled by proper housing. Attention to this point alone would mean a tremendous saving to farmers and, in addition, would increase the ease with which a machine is adjusted and the quality of work it does.

(From "Farm Machinery, Its Purchase, Care, Operation and Adjustment," University of Illinois.)

Make Own Penetrating Oil

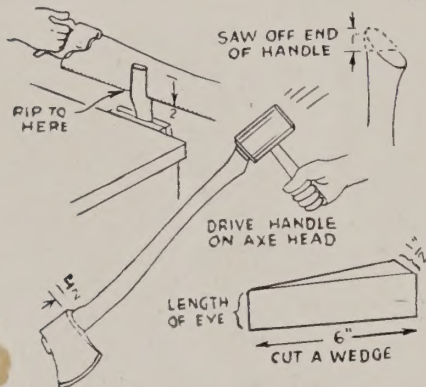
Agricultural engineers at Iowa State College say a good penetrating oil can be made in the farm shop by mixing 1 part new engine oil (S.A.E.20) with 10 parts water-white kerosene. One part of unsalted rancid lard may also be added if available. The engineers recommend that penetrating oil be applied to the machinery parts 24 to 48 hours before they are to be taken apart. This allows time for the oil to soak in and loosen the joint before pressure is applied.

Refitting Axe Handles



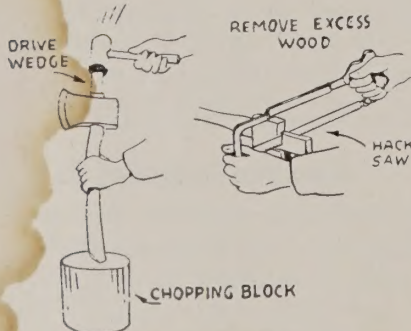
Handle should fit axe eye snugly at all points. Tap in handle to test it for hang.

A new axe handle, as purchased in the store, was not made to fit an axe head. It was made to possibly fit a number of heads, and thus needs to be shaped. A wood rasp is probably the best tool to do the job.



Cut off one inch of grip end of handle so it won't split when driven in head.

The handle should fit the axe eye snugly at all points. Never drive a nail in the end of the handle after it has been fitted to the head to hold the head on. It will split the wood, and allow the head to slip off. Use a wooden wedge as shown.



Wedge should be dry soft wood. Drive it squarely. Soak handle with hot linseed oil.

The wedge should be dry soft wood. After driving it squarely into the handle soak the handle in hot linseed oil for a short time.

Prevent Rope Ends Fraying

When you knot the end of a rope to prevent it from fraying, dip it into glue and allow it to dry before using. This will keep the knot from loosening. If the rope is to be used where it is likely to get wet use a good grade of water-proof glue.

Hint For Filing Saw

When filing any kind of a saw, smoke the teeth first by passing them through the flame of a candle. This will make it easy to see the fresh file cut and to hold the file at the right angle for the job.

Protecting Padlocks

Rain and snow falling on padlocks used on the outside of buildings cause rusting and freezing, making them difficult to open. This trouble can be eliminated by cutting a piece from an old inner tube and tacking it on the side of the building so that it will hang down over the lock.

Keeping Hammer From Falling

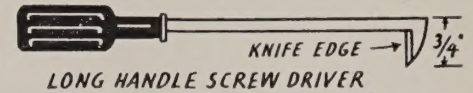
When you are working on a ladder or scaffold, or on a well curbing, dropping of the hammer not only causes inconvenience but also might endanger other persons or livestock. To avert this, drill a small hole near the end of the hammer, insert a thin strip of rawhide and make a loop in the rawhide large enough to go over the wrist. This loop can also be used for hanging the hammer up when it is not in use.

Adjustment and Repair of Mowing Machines

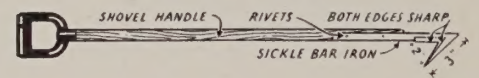
Under average conditions probably no other farm machine will yield as large a return for proper care, adjustment and repair as the mower. The life usually will be increased, the draft materially reduced and the quality of work considerably improved by good care. Adjustments and repairs are easily made, and the cost is relatively small. This article covers the common adjustments and repairs, and the methods as explained will require a minimum of time, labor and equipment.

The cutter bar assembly, including the knife, guards, guard plates, wearing plates and knife clips, is the heart of the mower. The cutting action may be compared to an ordinary shears of which the knife sections are one blade and the guard plates the other, with the wearing plates and the knife clips holding the two parts together so that a shear cut results. The cutting troubles are usually located in the cutter bar assembly.

A Tool to Clean Spreader Beater

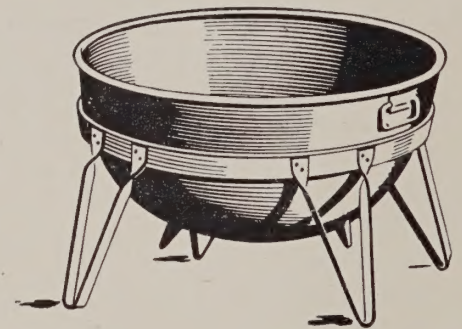


If you've had the mean and tedious job of cleaning the straw, hay and binder twine from the beater of a manure spreader here is a hand tool that will do it in a jiffy. It will end skinned hands and broken knife blades. Your blacksmith can make it for you out of an old long-handled screw driver. A hook is formed at the end of the screw driver and the inside of the hook is sharpened to a knife edge. With this tool you can hook in around the beater, cutting and pulling out clogging material.



A similar tool on a larger scale can be made for removing large weeds from the hills of corn. Use an old shovel handle and rivet a sickle bar iron onto the end of the handle. In this case both inside edges of the hook are sharpened.

A Simple Cauldron Stand

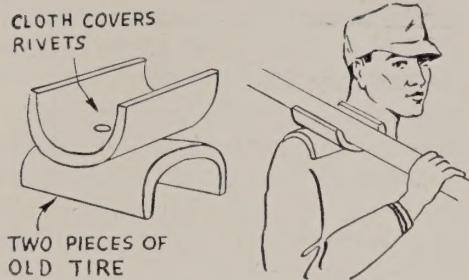


To make a simple and sturdy stand for the cauldron kettle, get an old tire rim equal in inside diameter to the outside diameter of the cauldron about half way up the outside. Bolt, rivet or weld legs made of $\frac{1}{4}$ " x $1\frac{1}{4}$ " strap iron in position as shown.

To Remove Road Tar Spots

Linseed oil will remove road tar without damaging the finish of your automobile. Saturate the spots of tar with the linseed oil. Let linseed oil stand for a few minutes to allow it to penetrate the tar. Heavier spots require more time. Then remove each spot with cheese cloth. The linseed oil softens the tar so that it can be easily rubbed off.

Shoulder Aid



Aid for sore shoulders is a pad made from two sections of an old tire and used for carrying pipes and logs. The two sections are riveted together and the rivets covered with a cloth pad.

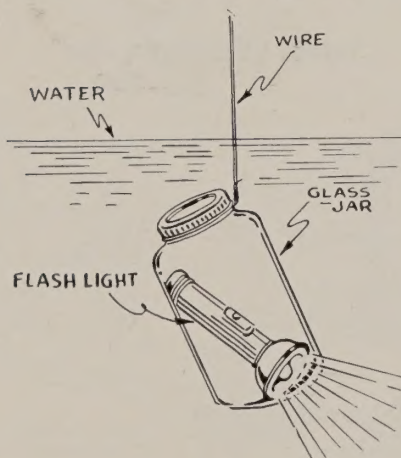
Grain Drill Seed Supply Made Visible

By sawing a small hole in the grain drill seed box and covering it with a piece of clear glass, you can see from your tractor seat whether or not the seed supply is exhausted. This saves frequent stops necessary to see that there is a supply of grain seed in the box.

Grease Boots with Bacon Rind

Leather boots and work shoes can be kept soft and pliable as well as reasonably waterproof by frequently rubbing them with the inside of bacon rind. Do not use this if boots are ever to be polished as they will not polish after such a treatment.

Water Flash Light



The diagram shows how to use a flash light to locate articles in deep water. Drop a flash light into a fruit jar with the light turned on, screw the lid down tightly and lower the jar into the water. The article can then be easily seen.

Usually it will be necessary to put a piece of lead or other weight in with the flash light before the empty jar will sink.

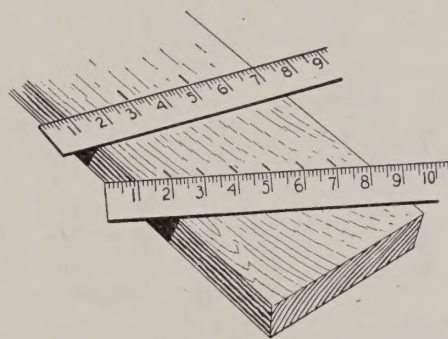
Toe Pull Opens Screen Door

Did you ever have to yell for help when you had your arms full and a screen door blocked your path? A toe pull attached to the bottom of the screen door is a great convenience in such circumstances. This may be a simple little block of wood securely nailed to the outside of the screen door and under which the toe of the shoe may be hooked.

Oil Spreader Box

Two coats of used crankcase oil at the beginning of the season will effectively prevent manure from sticking and caking to the spreader box. Coat the oil on with an old paint brush, just like paint. After the first coat is well soaked in, apply a second coat.

To Divide a Board of Any Width Into Equal Parts

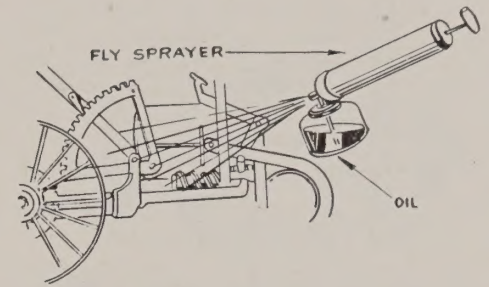


It's easy enough to divide a four inch board into four equal parts for ripping if you have no other measuring device than a foot rule. If you want to divide the same board into three or five or seven equal strips, it's a little more difficult unless you know the trick. Of course, it is possible to figure out the width of the strips mathematically, but there's a simpler way that works regardless of the width of the board or the number of strips to be cut. Simply lay the rule across the board at an angle so that the number of inches measured is equal to the number of parts into which the board is to be divided. The inch marks then automatically divide the width of the board into the desired number of equal parts. (In case the number of pieces into which the board is to be divided is less than the number of inches in its width, use multiples of $1\frac{1}{2}$ " or 2" instead of 1").

Pump Cleans Seed Drill

A tire pump can be useful in cleaning the seed drill of dirt and seed. This is safer than any other method because the compressed air from the pump cannot damage the drill.

New Use for Fly Sprayer



To make sure a coating of oil reaches all the corners, as well as to speed up the job of applying crankcase oil to disks, plowshares, and mower sections, try using an ordinary fly sprayer for the application job. Warm the oil slightly for best spraying results.

Making Tools Easy to Find

We have all had experience with lost tools when working in the fields or around the house or barn. You can save a lot of time and temper—as well as tools—by painting the handles of wrenches, hammers, saws, shovels, hoes, etc. a bright yellow or orange. These colors are easily seen, even from great distances, and tools will be found easily, even when left lying in grass or weeds.

Be sure to use a good quality of paint or enamel that will dry hard.

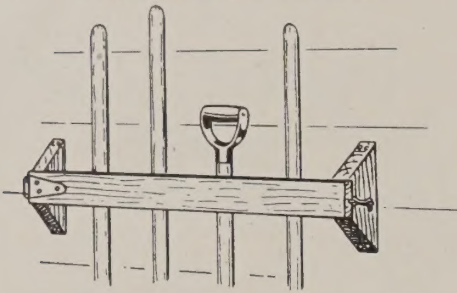
This plan also makes it easier to identify your own tools and reduces losses through loans of tools to others.

Right Way to Pour Oil



Ever have trouble pouring oil from a can which has no air vent? Did it come in a slim trickle one minute, then gush far over the top of the funnel the next? Simply hold the can with the hole at the top, thus making the upper half of the outlet hole serve as air intake. Works like a charm.

Keep Tools from Underfoot



If shovels, spading forks, pitchforks and similar tools are stored where they may be knocked down and trampled on by livestock this simple rack may be all that is needed to remedy the trouble. Attach two short 2"x4" blocks to the wall where tools are customarily kept and at a height below the tops of handles. Hinge a 1"x4" board to one block and fasten the other end with a hook. It is not advisable to set the mounting blocks more than two feet apart. If more storage space is required increase the number of racks. This rack merely holds the handles against the wall so that the tools will not fall over and get tangled underfoot. A piece of 1"x2" may be nailed to the floor several inches out from the wall to keep the lower ends of the tools from sliding out.

To Find Length of Belt Required

When it is not convenient to measure the length required with the tape-line, apply the following rule: Add the diameter of the two pulleys together, divide the result by 2, and multiply the quotient by $3\frac{1}{4}$; then add this product to twice the distance between the centers of the shafts, and you have the length required.

If possible to avoid it, connected shafts should never be placed one directly over the other, as in such cases, the belt must be kept very tight to do the work.

It is desirable that the angle of the belt with the floor should not exceed 45 degrees. It is also desirable to locate the shafting and machinery so that belts should run off from each shaft in opposite directions, as this arrangement will relieve the bearings from the friction that would result when the belts all pull one way on the shaft.

To Find Belt Speed in Feet per Minute

Multiply diameter of pulley in inches by 3.1416. This gives circumference of pulley, and this result multiplied by number of revolutions will give you belt speed in inches.

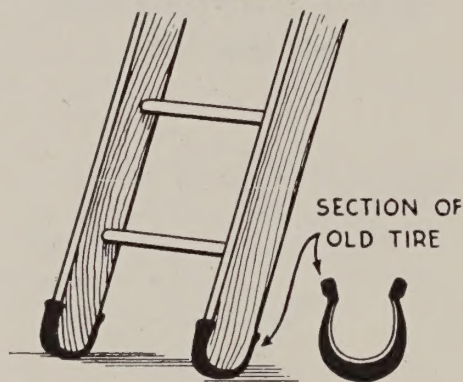
Ice Cleans Grindstone

If your grindstone becomes badly coated with dirt and steel, hold a piece of ice against it while it is turned slowly. Remarkable as it seems, this will remove the accumulation very quickly.

To Catch Chips When Boring Overhead

A conical dirt catcher will keep chips, dirt and dust out of your face when you are boring holes in the ceiling. It is made of stiff cardboard and is provided with a wire guide at the wide end to hold the cone in position and is fastened with a rubber band around the shank of the bit. It, of course, revolves with the bit while boring. When you are working in the house, this device also keeps the litter off the floor.

Avoid Ladder Slipping



When using a ladder on hard or slippery surfaces, some method of holding the ladder should be provided to prevent accidents. Sections of old tire casings, attached to the foot of the ladder as illustrated, will prevent it from sliding. These rubber pads, a little wider than the sidebars of the ladder, may be either nailed or screwed in position.

Avoid Fouled Spark Plugs

Spark plugs often foul because the improper type is used. They are manufactured in a number of different heat ranges. A cold spark plug designed for use in a high compression gasoline-burning engine will foul readily in a low compression distillate-burning engine. Distillate-burning engines require a hotter spark plug or one with a longer porcelain around the insulated point. Gasoline engines require a cooler spark plug or one with a shorter porcelain. A plug that is firing properly and is of the correct heat range will have a chocolate color around the points and porcelain. A plug that is too "cold" will be moist with unburned fuel around the points. A plug that is too "hot" will have a black scorched scale around the points and porcelain.

Thawing Frozen Pipes

The middle of a frozen pipe should never be thawed first because expansion of the water confined by ice on both sides may burst the pipe.

When thawing a water pipe, work toward the supply, opening a faucet to show when the flow starts. When thawing a waste or sewer pipe, work upward from the lower end to permit the water to drain away.

Loosen Nuts by Heating

When repairing farm machinery, difficulty is often encountered in removing rusted nuts from bolts. Heating often loosens a rusted nut so that it can be removed easily.

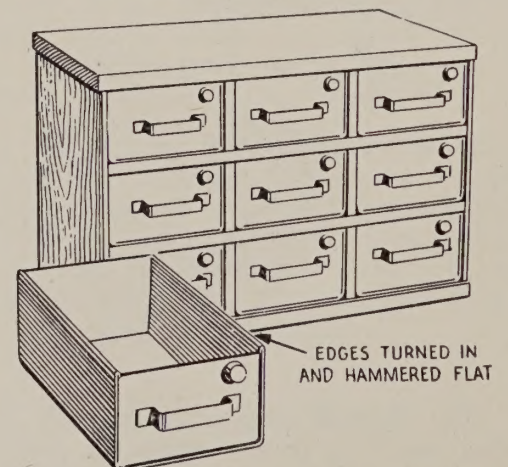
Rock Cracking Made Easy

Cracking rocks with a stone hammer may be all right if you need the exercise but there is an easier method. When you want small stones to use in foundation construction, apply a blow torch to large rocks, heat them up, and then give them a rap or two with a hammer. Stones of just the right size are the result.

Oiled Chain Gathers Dust

Exposed chains on farm machines which must operate in heavy dust are better not oiled at all, as the combination of oil and dirt forms a grinding compound which soon wears down metal. If a farmer feels that he must use a lubricant, a light dusting of powdered graphite on the chains is recommended.

Storage Cabinet from Cans



If you have a number of empty gallon oil cans, it's easy to make a handy cabinet for storing screws, bolts, nails, etc. Simply cut out one side of each can. Turn the cut edges in and hammer them flat to avoid injury. Make a wood case to accommodate the number of cans you wish to use, providing dividers as shown in the illustration.

To Tighten Loose Wood Screws

Remove the loose screw and drive into the hole a wooden peg that fits firmly and yet not so tightly as to split the wood. Then replace the screw and it will hold. If the screw must withstand some stress, a bit of glue on the peg will hold it even more firmly.

Here's another way to tighten loose screws. Remove the loose screw, pack the hole with steel wool, then screw it back into place. It will be as tight as new.

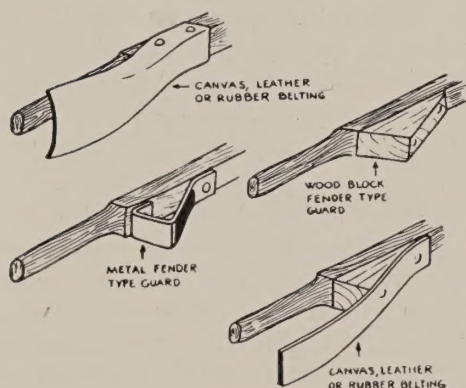
To Release Tight Screws

Here is a simple but ingenious way to loosen a tight screw. Press a red hot poker against the head. This heats the screw which will expand and of course its hole will be enlarged too. When the screw cools it will contract but the hole will not. The screw is then loose enough to remove without undue effort.

How to Remove Broken Screw

If you unfortunately break off a screw in hard wood, don't despair. You can remove it neatly by drilling a small hole alongside of the broken section and in line with the grain of the wood. With a nail punch then carefully drive the screw into the drilled hole. You'll have little trouble lifting out the broken section after you have moved it over into the drilled hole. Plug the drilled hole with a peg of hard wood and you are ready to start all over with a new screw in the old hole.

Knuckle Guards



For Trucks and Wheelbarrows

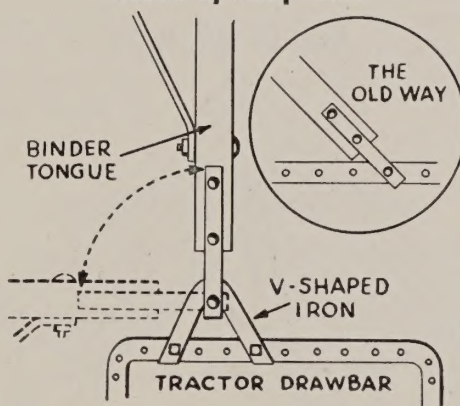
Many hands have been broken, fingers smashed and knuckles skinned as a result of striking the hands against door jambs, columns, piles of materials and other objects, while handling trucks and wheelbarrows. Knuckle guards that give fairly good protection are easily made. The accompanying illustration shows how.

National Safety Council Safety Instruction Card No. 248.

Making Tractor Hook-Up Easy

Here is how one farmer has made a simple job out of a task that formerly required two or three men and much effort. Using short pieces of 2"x6" or 2"x8" lumber spiked together, he has made blocks which hold the tongue of his heavy mower and other two wheeled implements up to the height of the tractor draw bar. He has made such a block for each implement and finds a place somewhere on the implement to carry it. When he is through using the implement or must unhook the tractor for another job, he places the block under the tongue and uncouples it. When he wants to use the implement again, he merely backs the tractor in, makes the connection, removes the block and goes to work.

Hook-Up to Stop Split Binder Tongues Caused by Sharp Turns



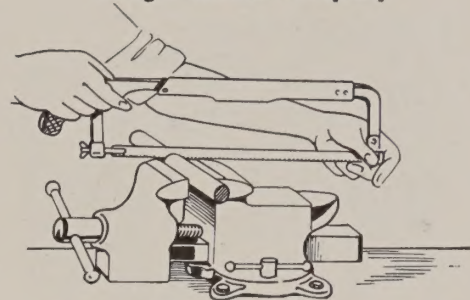
Sharp right angle turns may split the binder tongue on some tractor hook-ups. Note in the part of diagram labeled "old way" how tongue of binder may be split or broken by pinching against tractor draw bar if the angle of turn is too acute, such as a square turn made at corners.

The main diagram shows a simple 'V'-shaped attachment to the draw bar that permits a sharp right-angled turn and a neater job of cutting the field without danger of smashing the binder tongue. The attachment is made of iron a little lighter than that used in the drawbar, drilled for bolting to drawbar and attaching to binder tongue.

Protect Teeth of Handsaws

If you carry handsaws about the farm along with other tools, you probably have had trouble from damage to the teeth of the saw. An old piece of garden hose can remedy the trouble. The hose is cut the length of the saw and slit along one side. This fits smoothly over the saw teeth and gives needed protection.

Using a Hacksaw Properly



When using a hacksaw make sure that the material to be cut is held rigid and so placed that the maximum number of teeth engage through the cut. When cutting very thin stock, a good method is to clamp it between two pieces of wood and saw through the whole assembly.

Begin the cut carefully, but use sufficient pressure to make the teeth cut and not merely rub on the metal. On the return stroke lift the saw slightly to avoid dragging the teeth and thus dulling the cutting edge. The top speed for efficiency is about 40 to 50 strokes per minute. For faster cutting, increase the pressure, not the speed.

When a new blade is used it is a good practice to retighten the blade after the first few strokes.

Some of the most common causes of blade breakage can be easily avoided. Always use straight-line strokes to avoid cramping and binding. Fasten the piece to be sawed securely, for if the work becomes loose while cutting the sudden binding and distortion of the blade is practically sure to cause breakage.

Hacksaw blades having 18 teeth to the inch are best for general service; while for pipe or conduit, light angles, and ornamental iron, a blade having 24 teeth is preferable. Use a blade with 32 teeth to the inch for thin sheet metal and light tubing.

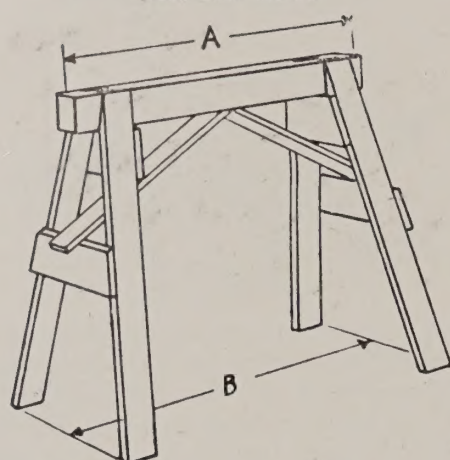
Wax Auto Door Latches

Auto door latches should never be oiled. The oil catches dirt and will soil clothing. Either paraffin wax, hard stick grease or graphite should be rubbed over the latch and strike plate. Latches will work smoothly and easily after this treatment. The same treatment may be applied to any door latch that is not operating as smoothly as it should.

Paint Tug Links to Save Time

To equalize tugs with chain traces it is, of course, necessary to count the links. This is a nuisance. By painting a certain link on each length of chain the count can be made from the link so marked, which saves much time.

Safe Saw Horse



Every horse, regardless of what it is to be used for, should be constructed so that the legs spread in all directions. The top should be shorter than the base so that it cannot tip over. Good bracing and use of sound material is important. The illustration shows one good type of construction.

(National Safety Council)

Sturdy Awl from Ice Pick

If you have an old ice pick, it's a simple matter to make it into a strong awl. Measure off the desired length, file a notch all around and break off at that point. Filing the end square for about an inch makes a good sharp point.

Protecting Silo Filler Against Rust

When you've finished using your silo filler for the year, first make sure that it is entirely clean and then, while it is still in motion, pour about a gallon of old crank case oil into the air holes alongside the blower. The fan will whirl the oil into all the working parts and inside of the blower pipes, coating them and lubricating them against rust and stiffness when the filler is started next season. The amount of the oil deposited will not be enough to damage the silage.

Preserve Tool Handles

An occasional rub-down of tool handles with linseed oil will preserve them, as well as improve their utility and appearance. The oil is applied from a cloth dipped in linseed oil.

To Mend Copper Tubing

First clean the broken tube carefully; then tightly wrap break or split with copper wire. Using a hot soldering copper, run a coat of solder all over the wire. This type of repair makes the pipe almost as good as new.

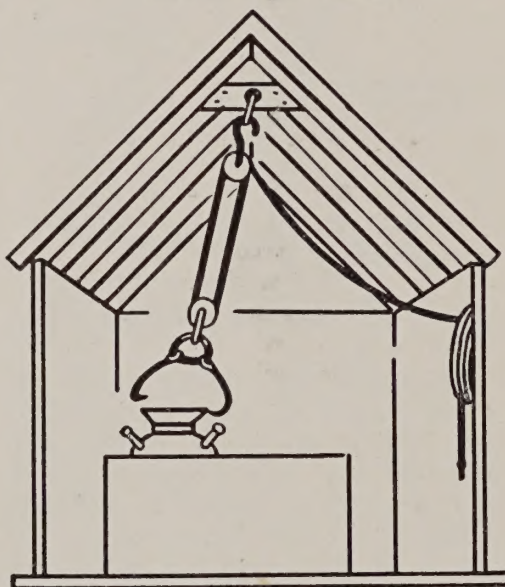
Driving Tacks in Tight Places

If you have difficulty driving a tack in a tight place or if it is too small to hold easily, try this idea. Stick the tack through a piece of paper, holding the paper so that the tack is in position for hammering. When the tack has been driven far enough to take hold, remove the paper and drive it home.

To Preserve Wagon Box Floors

To preserve and lengthen the life of the bottom of your wagon box or truck body give it an occasional coat of pure linseed oil. The oil should be heated to the boiling point and applied with a paint brush while it is still hot. A good heavy coat should be applied and left to stand several days before the truck or wagon is used. This will not only preserve the bottom of the box but it will also make it hard and smooth so that there will be less danger of damaging it when shoveling from the box.

Hoist for Milk House

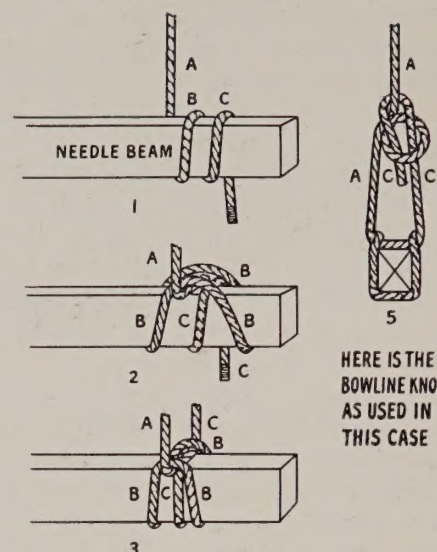


A block and tackle, permanently suspended from the top of the milk house, can save many backaches from lifting heavy milk cans in and out of the cooling tank.

There are many satisfactory arrangements, one of which is sketched here. Exactly how you build yours will depend on material available about the farm and the construction and arrangement of your milk house. The general idea is to provide hooks which can be easily attached to handles of the milk can, so that it can be safely hoisted and swung from the tank. In most cases satisfactory scrap material for this purpose can be found around the farm.

The cost of such an installation is small and it may be the means of saving many times its cost in personal comfort and even doctor bills.

Scaffold Hitch and Bowline Knot



The Scaffold Hitch is used to prevent the needle beams of suspended scaffolds from turning. The loose end of the rope is secured with a bowline knot.

1. Take two turns around the beam.
2. Bring end "A" forward between turns "B" and "C" then loop "B" over end of beam.
3. Pick up end "C" and adjust tautly, tying into "A" with Bowline.

Linseed Oil Preserves Wagon Wheels

Periodic soaking of wagon wheels in linseed oil will not only preserve and lengthen the life of the wheels but will keep the tires tight. This can be done by using a deep, narrow trough filled with linseed oil into which the wheel is set. If the wheel is not removed from the wagon the wagon can be slightly jacked-up so that the wheel will be free but immersed in the linseed oil. Turn the wheel every couple of hours until it is entirely soaked.

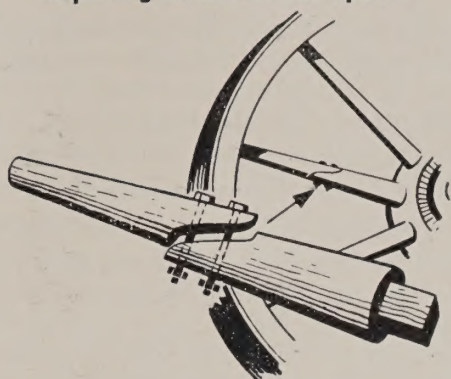
Wet Snow Won't Stick to Shovels

By coating shovels with melted paraffin, the annoyance of wet snow sticking to shovels can be overcome. This is really quite a labor-saver when one considers the extra effort necessary to knock snow off the shovel and the decreased capacity of the shovel if this is not done. Try it the next time you have wet snow to shovel.

Handy Twine Holder

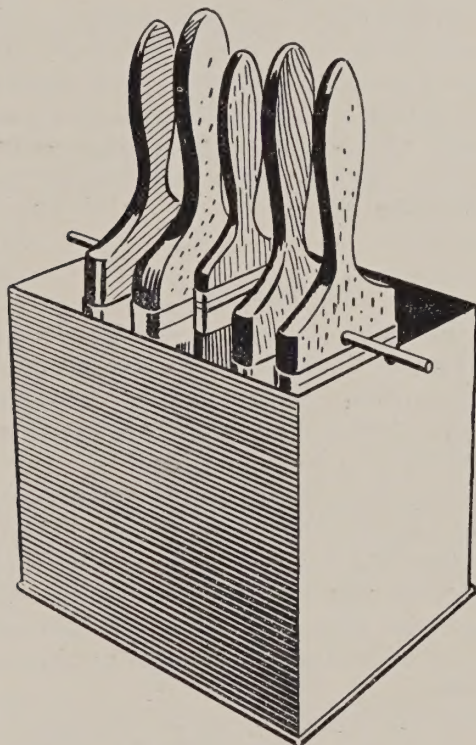
To keep twine from tangling while tying corn shocks in the field put the ball of twine in an old pail. For a handy knife with which to cut the twine rivet an old binder or mowing machine section at the top of the pail so that it projects over the rim.

Replacing Broken Wheel Spokes



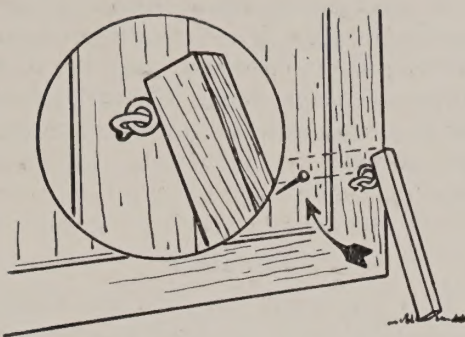
It's quite a job to take a wagon wheel apart to replace a broken spoke. Here's a way to make the replacement without all the trouble. Cut the new spoke into two parts as shown in the sketch and bolt them together with a couple of 3/16 inch bolts after the two halves have been placed in position. Use washers on each side of the spoke to keep the bolts from digging into the wood when they are drawn tight.

Protecting Paint Brushes



If brushes are allowed to rest on the bristles when placed in oil or water in a jar or can between painting jobs, the bristles will turn up and, in time, the brushes will be ruined. This can be avoided if the following practice is followed. Cut the top off a gallon varnish can about seven inches from the bottom. Cut a notch about 3/4-inch deep in each end as shown. Drill holes in the handles of brushes just above the ferrule. Brushes can be supported in oil or water in the can by passing a heavy stiff wire through the holes and resting the ends in the notches in the ends of the can.

To Hold Doors Open

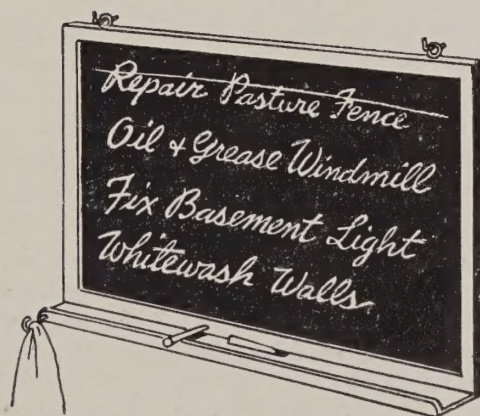


Two 1"x1 1/2" boards about 18 inches long will hold your garage doors open. Using screw eyes, attach one end of a board to the inside of each door. The boards should be hung low enough to drag on the ground a little. When the door is opened, the board drags on the ground and when the door attempts to swing shut, the board catches in the ground and jams the movement of the door in that direction. A nail is driven into the door at one side of the board so that the board can be swung over and rested on the nail, holding it out of the way when not needed.

Renewing Old Carpenter Square

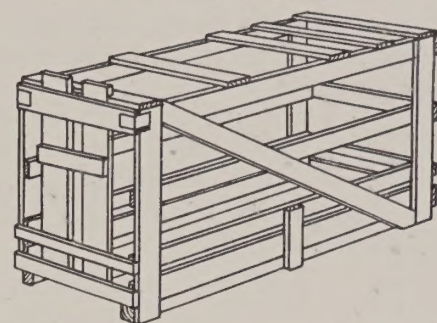
If your carpenter square is rusty, dull and hard to read, the following renewing method is recommended. Clean thoroughly using steel wool to remove excess or loose rust. Give the whole square a coat of white paint, then before it has dried, wipe paint off leaving the paint in the stamped numbers and number lines so they will remain white and easy to read. After remaining paint has dried, oil square thoroughly to prevent further rusting.

Keep a Job List Posted



There's no excuse for anyone to wait for the "boss" to come home and tell him what to do if a list of jobs to be done is kept posted where everyone can find it.

Satisfactory Hog Shipping Crates



Hog shipping crates must be strongly built to hold the animal, but they should also be light weight to save transportation costs. For 225 to 500 pound hogs, the crates should be 2 feet wide, 3 feet 4 inches high, and 6 feet 6 inches long. For pigs weighing under 100 pounds, the measurements are 1 foot wide, by 2 feet high, by 3 feet 10 inches long. For those weighing from 100 to 225 pounds, suggested dimensions are 1 foot 6 inches wide, by 2 feet 9 inches high, by 4 feet 9 inches long.

(Reprinted from University of Illinois Extension Service Circular 554)

Rope and Block Sizes



The choice of proper size blocks for a rope of given size has a lot to do with safety and the life of rope. Sheaves that are too small produce unnecessary wear on the rope and increase the friction load.

The best practice is to use the largest blocks that can be used giving due consideration to ease in handling, etc.

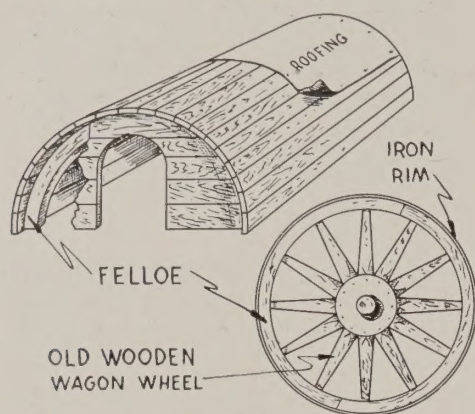
Recommended block sizes are as follows:

Size of Rope	Size of Block
Diameter	Designated by length of shell in inches
3/8"	3"
1/2"	4"
5/8"-5/8"	5"
3/4"	6"
13/16"-7/8"	7"
7/8"-1"	8"
1"	9"
1 1/8"	10"
1 1/4"	12"
1 3/8"	14"
1 1/2"	15"
1 5/8"	16"

National Safety Council Safety Instruction Card No. 88.

Handy Dog House

You can build a handy and comfortable dog house from an old wagon wheel.



Take the tire off. Saw off the spokes close up to the rim or felloe.

Use equal halves of the rim as rafters. Nail narrow boards to the rafters. Board up the ends, leaving space for a doorway for the dog.

When the curved part is covered with roll roofing, it will make a dry, snug house for your dog.

Don't Lose Parts

When taking something apart for repair that contains small screws or other minute parts, place the parts on the ridged side of a piece of corrugated paper. The ridges will keep the parts from rolling and becoming lost, and also enable you to keep the parts in proper order for reassembling.

Removing Stumps

Getting rid of stumps and wild and tame willows along ditches and edges of meadows is always a problem. Here is one solution.

They can be killed by a strong solution of sodium chlorate if spray is used strong enough, and the chlorate is applied dry to roots near the trunk.

After they are killed, they should be left until they are thoroughly dry when the dirt can be scraped from around the roots and the ground soaked with old crank case oil. If used properly, most of the trees will be burned up.

Loosen Rusty Screws

Put a drop of penetrating or other oil on the head. Let stand a few minutes. Then if the screw doesn't turn, hold the point of a hot rod or soldering iron against the head for minute or two.

The screw will then loosen and turn easily. Caution: if the screw head is in a finished surface, be careful not to let the point slip or remain long.

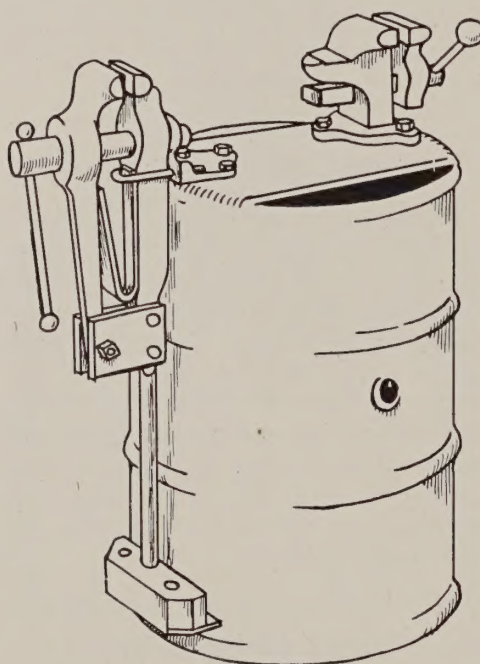
Pull Frozen Stakes

To pull stakes from frozen ground, tap them on the side with a heavy hammer or sledge. Then pour some kerosene or fuel oil around them. This will loosen the frost and lubricate the stakes so that a twist with a pipe wrench will bring them out.

Vise Stand

This vise stand has sufficient weight to be stable, yet is conveniently movable. The drum is filled about half full of sand and it can be tipped on the lower rim and rolled about the shop.

To make the stand, first cut a heavy piece of sheet steel to fit over the top of the drum. It should not fit inside the rim. Locate and drill or burn holes with the arc for the bolts which secure the vises. Bolt the vises to the plate making certain the bolts are drawn tightly down. The nuts are then welded



to the underside. Remove the vises and weld the plate to the upper rim, taking care not to cover the large bung which is used to add more sand.

The stand shown has a blacksmith's or leg vise, and a machinist's vise. One or two vises of any type may be used. When a leg vise is used, it is necessary to weld a small plate to the side of the drum to support the leg. The wooden block is fastened to this plate with two carriage bolts.

Soap Them First

When driving nails or screws into hard wood, always rub the nails with soap. They will go in easily without splitting the wood.

Tank Heater Draft

To start the draft in a fuel tank heater, take a piece of newspaper and fold it four or five times into a strip about an inch wide. Dip the strip in fuel, light it and drop it down the heater smoke pipe and the draft will start at once.

This is an improvement over blowing into the heater only to have it blow back in your face. Always use alcohol to dip the paper in. Keep it in a fruit jar and use only two or three tablespoonfuls at a time. The denatured alcohol will start the fire much faster than regular fuel oil.

Use Perforated Paddle

When stirring a can of paint, bore several holes in the paddle. As lumps of pigment are forced through these holes, they will be broken up. Paint will become smooth sooner and the mixing job will take less effort.

Wallpaper Patch

If you must mend your wallpaper and wish to do it so it will not show, tear out a piece of matching paper instead of cutting it, and paste it on with a good paste. Press the irregular edges down firmly. Be sure your design is in just the right place.

For Want of a Nail

In order to have a variety of nails with you when you start out to do those repair jobs, nail four empty one-pound coffee cans to a board about 4" by 9" as shown.

A strap or short length of hose forms the handle. The handle is nailed to the ends of the board. The board is secured edgewise between the pairs of cans. Be sure the bottom of the board lines up with the bottoms of the cans for a good base.



Sawdust Icy Walks

Has it ever occurred to you that when ice freezes, it always freezes slippery side up?

Next time your sidewalk or street is covered with ice, sprinkle sawdust on it. Sawdust is a superior non-skid material. It may cling to the soles of your shoes, but it does not ruin carpets, rugs or hard wood floors. Sawdust absorbs moisture more efficiently. After the ice is melted and the moisture has dried up, the sawdust can be easily swept or washed away.

Manger Cross-Bars

Cross-bars on mangers and hay bunks will save feed. Cattle and horses eat the best first, and after the hay is picked over, they frequently throw it out of the manger by tossing the head.

Rope Tip

Be sure to coil and hang hay ropes where there are no holes in the barn roof. A small amount of water can rot the rope out in one year.

Easy Hitch

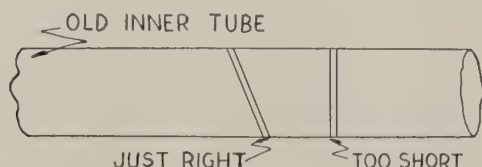
If your combine is heavy and has been hard to hitch to the tractor, you might mount the grain wheel and bracket from a grain binder on the combine tongue. When you unhitch, just screw the wheel down, pull the pin, and drive the tractor away.

Handy Hammer

To remove milk-can covers easily and quickly, no matter how tightly they are fitted to the can, keep a small rubber mallet in the milkhouse. You can get such a mallet at almost any auto supply store.

Emergency Belt

If you ever break a belt and need an emergency belt in a hurry, here is the way you can make one:



Cut a section from an old inner tube. By making cuts at an angle, you can increase the length of the belt.

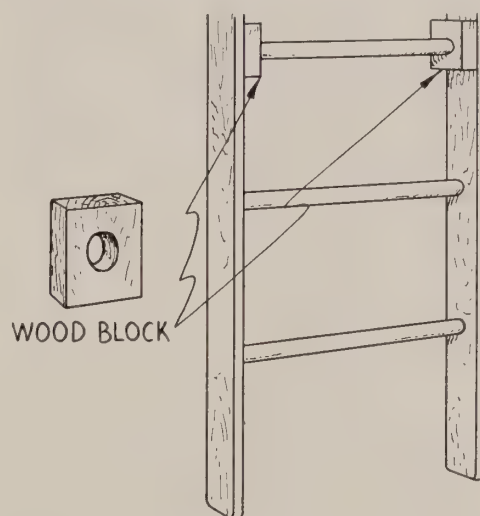
If you break a V-belt, this method will work too: Cut several belts of the above type all the same length. Place the belts in the same groove, one on top of the other.

Grinder Uses

You can increase the value of your grinder by using it for other purposes. One is to use a saw blade on the spindle for ripping or sawing lumber, cutting grooves, and so on. Make a box 24 by 20 inches cut out for saw blade so the box will set over the saw, and clamp securely to the bench. The blade should not come more than two inches above the box. A board clamped to the top of the box with shims under it will permit adjustment to secure the proper depth of groove, while a straight edged board clamped at one side of the blade acts as a fence or guide.

Ladder Repair

The sketch shows a simple way to repair a broken rung on a ladder without the necessity of taking the ladder apart. First saw the broken rung so it fits flush inside the rails. Then cut two blocks six inches long and as wide as



the rails. Bore a hole in each block large enough for the new rung, drive the blocks onto the rung, drive the blocks between the rails at the proper place, and nail securely to the rails. The rung is now as strong as when new.

Double Duty

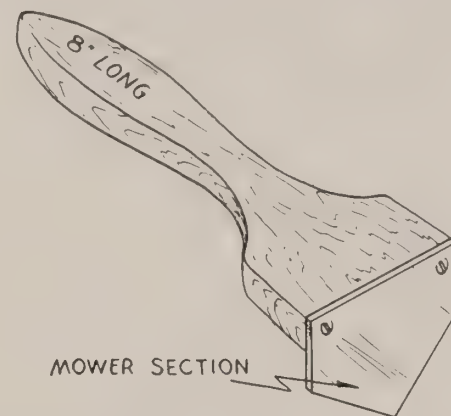
You can replace the regular legs on a hand truck with shorter legs to which heavy truck casters can be welded. The hand truck can be used as a truck in the ordinary way or for moving very heavy loads by using it as a flat truck with the load carried by both the casters and the regular truck wheels.

Stored Machinery

Hot oil and a spray gun can be used to give stored machinery protection against rust. An application about every six weeks may be necessary.

Garden Weeder

Here is a sketch of a handy garden weeder that can be used for many years to hoe up close to the plants in a row. Take a board an inch thick and eight inches long. Leave a head three inches wide or the width of a mower section. Whittle it down to a nice round handle.



Fasten a mower section to the head as shown with two screws.

Sparrows Out

Here is how you can avoid the June chore of cleaning bird's nests out of your hay carrier. Put an old sack on top of the carrier, between it and the track. Tie it down to the carrier with twine or wire. Next June, remove the sack and the carrier will be free of nests.

Extra Key

To save the price of a car window or a bill from a locksmith, you might solder an extra car key inside one of the hubcaps, using just a drop of solder so that the key can be pried loose with your finger nails. Be sure the hubcap is on tight. Next time you lock yourself out, you will have an "in" and need not worry.

Tack Knack

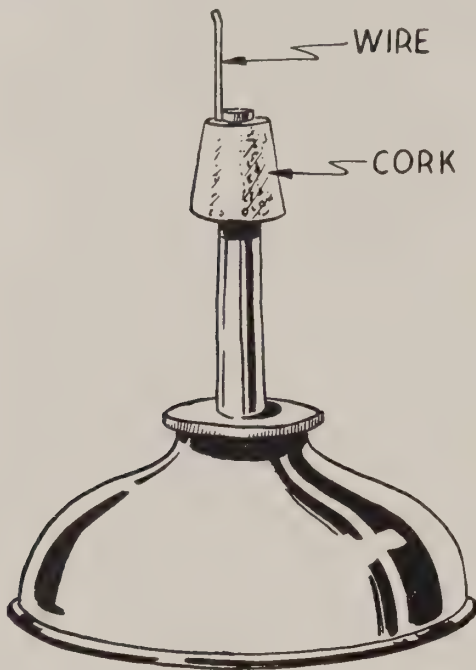
When you rest a brush on the bottom of a paint can, even momentarily, paint gets on the handle and makes it slippery and messy. Nor does it do the bristles any good. Instead, drive a large-headed tack into the handle, just above the metal collar. Let the head of the tack protrude so you can use it to hang the brush on the lip of the can.

Melting Babbitt

To melt babbitt and lead, take a discarded cast iron piston as a container, put a bent pipe through the wrist-pin hole as a handle, then file or grind a notch in one side of the skirt for pouring. This melting pot works fine in a forge, with a blow torch, or in a good clean furnace fire.

Easier Oiling

Here is one way to solve the problem of lubricating out-of-the-way places. Put the spout of the oil can through a cork; then stick a small wire into the cork so



that it touches the end of the spout. Drops of oil run along the wire, which can be bent to reach difficult places.

Paint Mangers

Horses may be discouraged from chewing woodwork if the mangers and feed troughs are painted with coal-tar dip.

Machinery Numbers

If the numbers on a broken machine part are not legible, place a piece of paper over the numbers and make numerous lines across them with a pencil. Light markings on the paper will usually outline the numbers so they can be read.

Tight Handles

Hardwood wedges are better than fence staples or iron slugs for keeping a hammer or axe tight on the handle.

Feeding Floors

Feeding floors are an excellent means of saving feed. Small cement-covered yards will keep hogs or cattle gaining during muddy spells. The end of the threshing season is a good time to put these barnyard improvements into effect.

Warm Polish

Before applying furniture polish, set the bottle or can in a pan of hot water to warm it. This will result in a better job of polishing and an easier one.

Jug Trap

An ordinary gallon glass jug is said to be an effective mousetrap. It is set up in the following manner:

Take a 2" x 4" block five inches or so long. Lay it on edge with the mouth of the jug across the middle and drive a small nail on each side to keep the jug from rolling off. Mouth of the jug should be tipped up a little and should extend only half-way across the block.

Put a few bacon rinds into the jug. Mice go in after the rinds. Once inside they cannot climb up the smooth glass again.

Good Heater

A heater like that illustrated will do wonders to warm up the oil in your car in even the coldest of weather. Place the heater under the oil pan of your car and let it burn about 30 minutes.



To make the heat lamp, use a board about 12 x 15 inches, with a 1 1/4-inch hole bored through the center. Fit a socket for a lamp bulb in this hole.

Cleats on the board hold the base off the floor. Almost any 4-quart can will serve as a chimney to direct the heat upward.

Tire Change

There is no need to jack up the front end of the tractor if you have to change one of the front tires. Run the good tire up on a block about 4 inches wide, 6 inches high and 24 inches long. This will leave the other tire free to be worked on.

Handy Oiler

For carrying an oil can on your tractor or other machines, cut a strip about one inch wide out of the side of a tin can. Bolt this can anywhere on the tractor so that you can set the oil can in it with the handle sticking out of the slot. The oiler can be reached easily when needed.

Tool Storage

You can keep your spades, hoes and even pitchforks from rusting by cutting the top out of an old oil barrel, adding about 16 inches of old oil in the bottom, and standing your tools in the solution.

Electric Drill

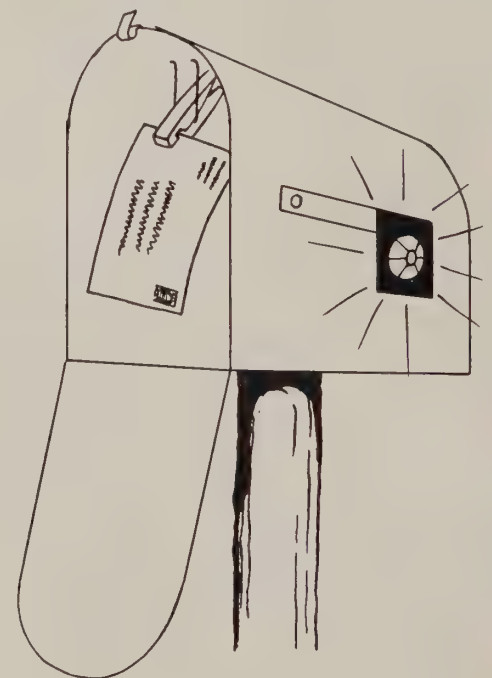
To use your electric motor for drilling, remove the chuck from a discarded hand brace. Buy a half-inch shaft coupling and with it connect the chuck to the shaft of the motor.

You can use a simple drill stand to mount the motor, or work can be clamped to a sliding table and held against the drill with the motor horizontal.

Mailman's Dream

Here is a description of a mailbox. On the signal or flag, rivet a reflector as used on the rear of trucks. This will show a red signal when the snow plow comes along after night and may save the mail box.

Around the edge where the door closes, put some grease (preferably a rustproof preparation used to protect metal) to keep the box from freezing shut during sleet or freezing rain, and it will also open and shut more easily.



On the inside near the front fasten a clothespin, one of the two-piece type with a metal spring. It can be fastened by making a staple fit through the coil spring and the other part of the pin, then fastened to the top of the box by soldering or riveting. This holds outgoing mail up so it is within easy reach and it is easily pulled out of the clothespin.

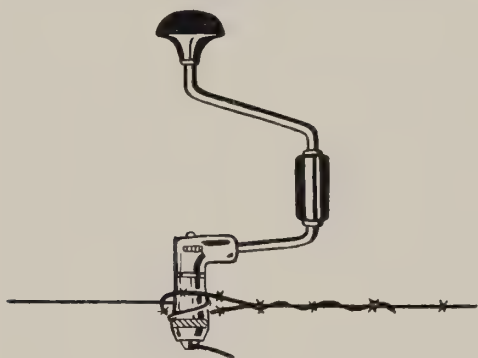
FENCING SECTION

Republic Wire Gauge

The following table of sizes, weights and length of steel wire will often come in handy for reference purposes, as, for example, when you wish to know the number of feet in a 100 pound coil of 9 gauge wire.

Republic Steel Corp. Gauge	Diameter in Inches	Pounds per 100 Feet	Feet per 100 Pounds
4.....	.2253	13.54	738.6
5/32".....	.21875	12.76	783.5
5.....	.2070	11.43	875.0
6.....	.1920	9.832	1017.0
3/16".....	.1875	9.377	1066.0
7.....	.1770	8.356	1197.0
8.....	.1620	7.000	1429.0
5/32".....	.15625	6.512	1536.0
9.....	.1483	5.866	1705.0
10.....	.1350	4.861	2057.0
1/8".....	.125	4.168	2400.0
11.....	.1205	3.873	2582.0
12.....	.1055	2.969	3369.0
3/32".....	.09375	2.344	4266.0
13.....	.0915	2.233	4478.0
14.....	.0800	1.707	5858.0
15.....	.0720	1.383	7232.0
16-1/16".....	.0625	1.042	9598.0
17.....	.0540	.7778	12860.0
18.....	.0475	.6018	16620.0

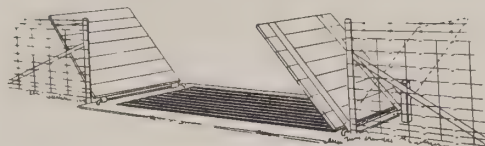
To Mend and Restretch Broken Wire



You can make your broken wire tight as new by adding a piece of smooth wire as a connecting link between the two broken ends. Here's how to do it.

Splice a piece of smooth wire securely to one end of the broken wire and make a stout loop in the other end of the broken wire. Slip the loop over the chuck of an ordinary brace, then pass the linking wire through the loop, around the chuck of the brace and lock it in the jaw of the chuck. When the brace is revolved the linking wire will be drawn through the loop and wound onto the chuck. When the wire is tight enough, unwind the brace, being careful not to lose tension on the wire. The fact that the linking wire is drawn through the loop makes it easy to fasten without losing tension.

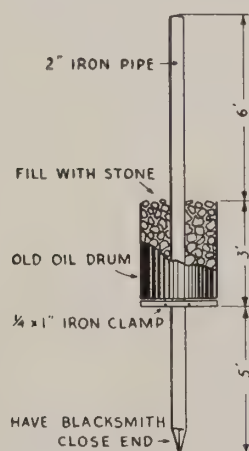
Hinged Stock Gap Cover



A stock gap is a mighty handy way of keeping livestock in a field without the necessity of opening and closing a gate every time you drive in and out of the field. With such an arrangement it is usually necessary to locate a drive-through gate, adjacent, for the passage of livestock. The stock gap itself may be made to serve this purpose by constructing wings or guards of planks which may be dropped down on the stock gap when livestock are to be driven through.

The wings or guards should be constructed of two-inch planks making them of sufficient size to completely cover the gap. The planks can be joined together by two heavy pieces of strap iron which are allowed to project at the outer edge of the guard and curved to form a hinge. By placing posts to hold them at an angle as shown, they will also serve as guards to prevent stock from approaching the stock gap from the sides.

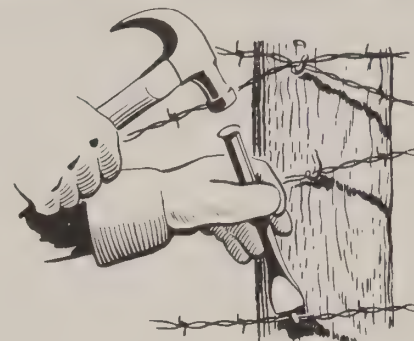
Posts for Fences Extending Into Lakes or Streams



Farmers having pastures along lakes or streams frequently have trouble keeping fence posts in place where the fence extends out into the water.

A post constructed as shown in the illustration will remain fixed throughout the year and will withstand the pressure of ice in the spring. The oil drum filled with stones will give the post the necessary rigidity to withstand almost any strains ordinarily encountered.

Removing Old Fence Wires from Wood Posts

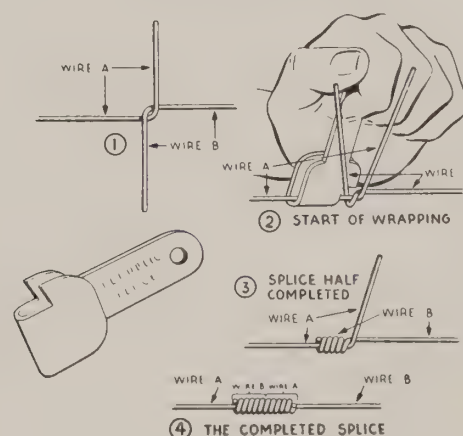


If fence is to be removed from old wood posts, a cold chisel and hammer will enable you to quickly remove the old fence wire as illustrated. Always wear heavy gauntlet type gloves to avoid injury to the hands and arms.

Protecting Fence and Barbed Wire in Storage

Here is a good plan to forestall rusting and add to the life of temporary fences and barbed wire in storage. Spray them well with oil every two or three months while they are being stored. A large hand insect spray can be used for the purpose and a medium grade motor oil should be employed.

Splicing Smooth Wire



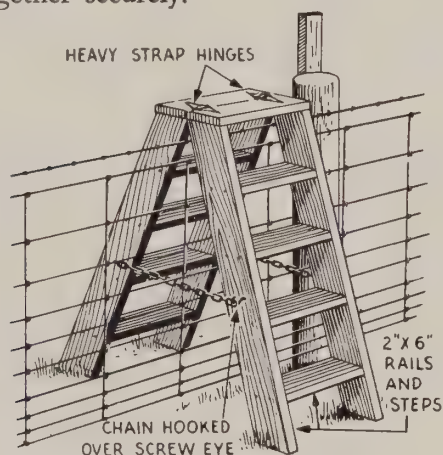
The "Western Union" splice illustrated above is recommended for splicing smooth wires such as brace wire, electric wire, etc. Each strand should be wrapped at least five times around the other. In the case of small diameter soft wire several additional wraps are desirable. While ordinary pliers may be used in making the splice, there is danger of injury to the coating on the wire and the use of a good splicing tool such as that illustrated is recommended.

Fence Stiles

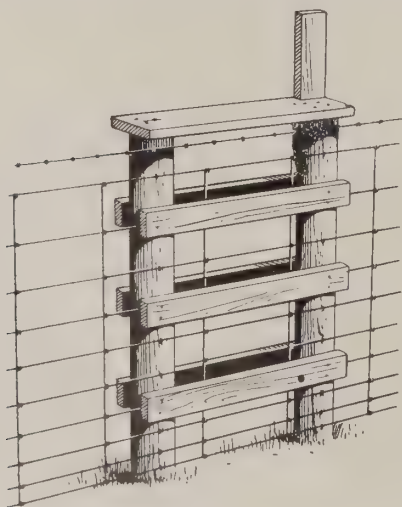
One of the most frequent causes of fence trouble is the breaking or bending of line wires or loosening of fastenings caused by persons climbing over the fences. Most of this damage can be avoided by the construction of stiles in such places where the traffic is not heavy enough to warrant the use of gates. Stiles should be placed at convenient crossing places wherever there is occasion to cross the fence. Paths will usually determine most suitable places for their location. In long fields two or more stiles may be needed.

The following illustrations show three types of stiles, including a portable type which can be moved to any convenient point.

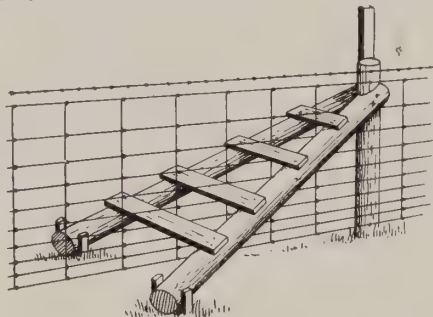
In constructing any of these stiles, care should be taken to use only sound material and to nail or spike all pieces together securely.



Portable Stile—This type of stile can be transported easily to any needed crossing place. Both rails and steps should be made of 2"x6" finished material and the two sections should be hinged together with heavy strap hinges. Light chains passed through the fence as shown prevent the legs spreading apart. This type of stile should always be set up close to a post and chained or wired to the post to prevent tipping.

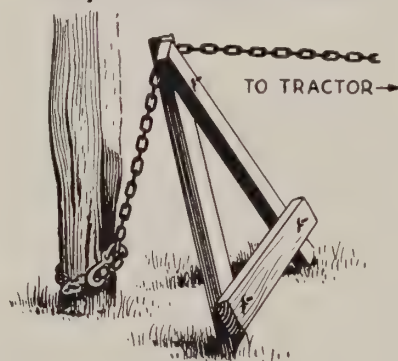


In-Line Stile—This stile has the advantage of not projecting out into the field on either side of the fence line. It does, however, require the setting of an extra post. Rungs should be made of material approximately 2"x4" and the top step of 2"x6". Nail a piece of 2"x4" securely to one of the posts to serve as a handhold.



Rail Stile—This type of stile must be used in connection with a wood post but can be constructed of either rough or finished lumber. In event that finished lumber is used, side rails should not be lighter than 2"x6" and rungs 2"x4". A piece of 2"x4" securely nailed to the post so as to project about two feet above the top of the post provides a handhold by which the user can steady himself when at the top of the stile.

Easily Constructed Post Puller



A simple but effective post puller can be made from three pieces of 2" x 4" or 2" x 6" bolted together to form a triangle as shown. Hook a chain around the bottom of the post and pass it over the apex of the triangle. A slight pull by horse or tractor will quickly remove the post.

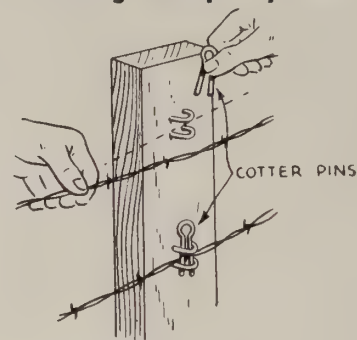
Staples Drive Easier

To drive staples more easily into hard wood, pour a little oil over them. They will not only drive easier, but will bend over less frequently, and the oil provides added protection against rusting.

Good Staple Puller

An old worn-out mowing machine guard will make a good staple puller. Drive the point of the guard through the staple between the wire and the post.

Fastening a Temporary Fence



Here is a very quick and effective method of fastening temporary fences to wood posts.

Merely drive two staples into each post for each strand of the fence, spacing them about one-half inch apart. Pass the strand between the staples and, holding the wire against the post, insert a cotter key or nail through both staples in front of the wire. To remove the fence, just remove all the pins or nails from the staples.

Selecting and Preserving Wood Posts

When wood posts are used in a fence line, considerable care should be used in their selection and certain kinds should not be used without preservative treatment.

The Bureau of Agricultural Engineering, U. S. Dept. of Agriculture, states in Information Series No. 28 (1932)—

"The most effective preservative for wood fence posts is creosote. The method applicable to use on the farm is described in Farmers' Bulletin 744, 'Preservative Treatment of Farm Timbers.' A copy of this bulletin may be secured by applying to the Superintendent of Documents, Government Printing Office, Washington, D. C."

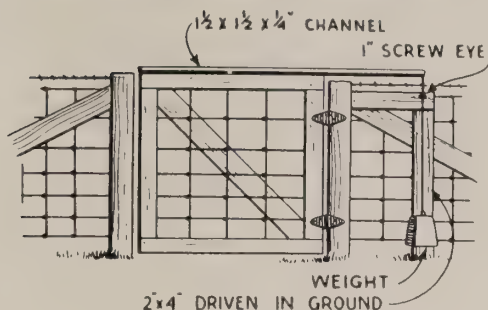
Average Life of Untreated Wood Posts (In Years)

Osage Orange..30	White Oak ..11
Locust24	Tamarack ...10
Red Cedar20	Cherry10
Mulberry17	Hemlock 9
Catalpa16	Sassafras 9
Bur Oak15	Elm 9
Chestnut15	Ash 9
White Cedar ..14	Red Oak 7
Walnut12	Willow 6
Pine11	

In the above figures on the durability of various woods, it should be borne in mind that the rating applies to heart wood only. The sapwood of any species is not durable and should be avoided whenever possible. Post-split large trees will contain a smaller percentage of sap wood than when the entire small tree is used.

(Reprinted from "Farm Fence Handbook")

Self-Closing Garden or Poultry Gate



It's so easy to leave the garden or poultry yard gate unlatched when you are coming through with your hands full of eggs or vegetables. It's difficult to unlatch and open such gates, too, when you are thus encumbered.

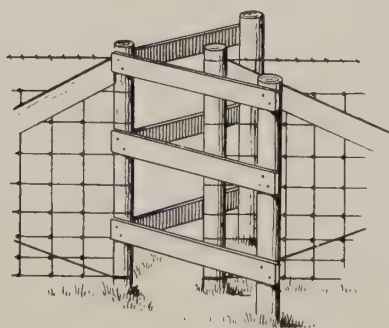
Here is a double acting gate that will eliminate those conditions. A slight push will open it and it swings back into position when you have passed.

The closing arm may be made from 1 1/2"x1 1/2"x1/4" angle iron, about 18 inches longer than the gate itself, fastened to the top of the gate with heavy wood screws. If a steel gate with pipe frame is used, the angle iron can be bolted to the top of the frame through holes drilled through the pipe. Double acting hinges should be used, permitting the gate to swing either way.

The rope (or a rust protected chain) is fastened to the end of the closing arm and passes through a one-inch screw eye screwed into a piece of 2"x4" which has been driven into the ground and securely fastened to the gate post brace. The weight on the opposite end of the rope or chain quickly returns the gate to the closed position after you have passed through. This weight may be an old iron casting or paving brick.

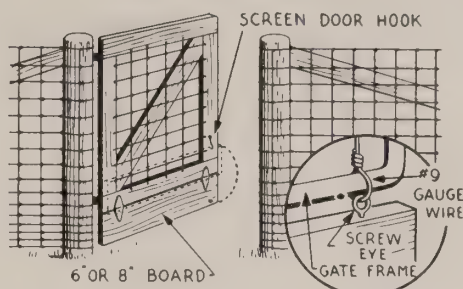
It may be necessary to bend the projecting end of the angle iron slightly to bring the rope fastening directly over the screw eye when the gate is closed.

Walk-Through Gate



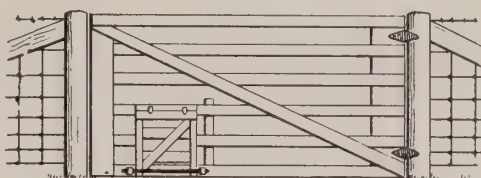
The gate shown in the illustration is very handy as it permits a person to walk through from one field to another while barring the way to cattle and other large livestock.

Dragless Walk Gate



Here's a solution to the problem of the walk gate that drags in the mud or snow. Just raise the gate six or eight inches and fasten a board of about that width to the bottom with a pair of strap hinges. When it is necessary to use the gate while it is muddy or a heavy snow lies on the ground, swing the board up and hold it in position with an ordinary screen door hook. If a steel gate is used, the "hinge" shown in the circle can be employed.

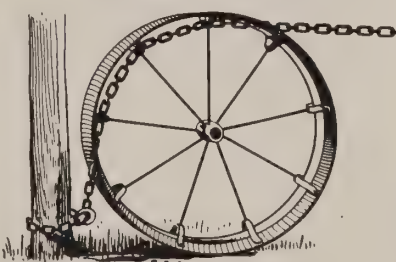
Double Purpose Gate



Here's a handy gate arrangement for separating hogs from cattle or allowing the hogs to enter the cattle pasture without opening the large gate and running the risk of the cattle getting out.

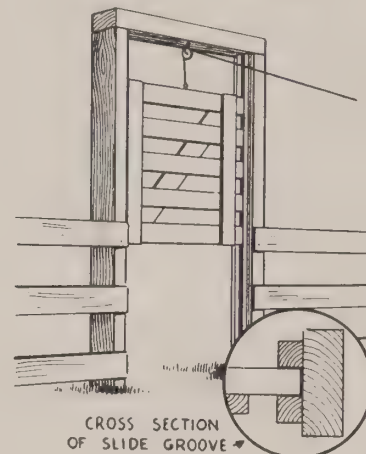
The small gate section is built into the large drive gate. Hinges are provided on the top or side and it may be held shut by a bar or a hasp which can also be used to hold it in the open position.

A Simple Post Puller



If you have an old planter wheel and a log chain handy, it's easy to make this simple but very effective post puller. Wrap the chain about the bottom of the post and place it between the two sections of the split tread. A slight pull by a tractor or team of horses usually brings the post out of the ground.

Handy Hog Pen Gate

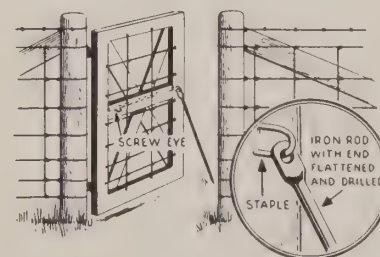


Hog raisers frequently find it difficult to separate the stock sows from pigs they wish to pen up for fattening. The usual plan is to have a man standing at the gate which leads from the pen to the enclosure where the fattening animals are to go, ready to open or close the gate as required. Often the hog which is to be moved from the drove starts toward the gate but becomes scared at the sight of the man and turns back.

This simple gate shown in the illustration eliminates this difficulty as it can be opened and closed readily from any point on the platform.

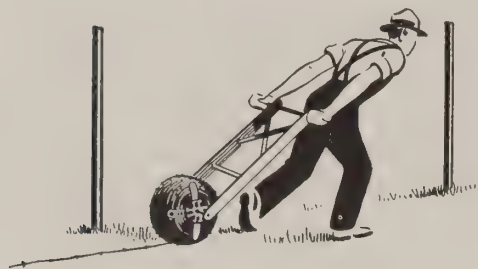
If a little grease is placed in the slide groove, the gate may be raised by a slight pull on the rope. When the tension on the rope is released, it quickly drops down, barring the way to passage of the animals. When in the closed position, it cannot be opened by pressure from either side.

Gate Holder



If you find it necessary to hold a swinging gate open, here's an idea that will solve the problem. Flatten one end of a piece of 1/2" rod and drill a hole in the flattened part to take a large size staple. Sharpen the other end of the rod so it will dig into the ground. Fasten the rod to the gate with the staple as shown. A 1/2" screw eye opened up can be driven into one of the cross pieces of the fence to hold the rod out of the way when it is not being used.

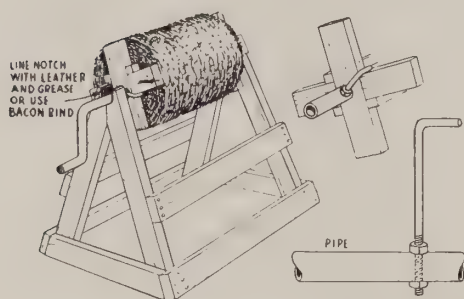
Barbed Wire Handler



Here is a device which makes it safe and easy to handle barbed wire. It consists of a framework of two pieces of 2" x 4" about four feet long, spaced about 12 inches apart. The cross pieces may be made from 1" x 2" boards. Drill holes in each end of the 2" x 4" pieces to permit a piece of half inch gas pipe to be inserted. The pipe at the top serves as a handle and that at the bottom as an axle for the barbed wire reel.

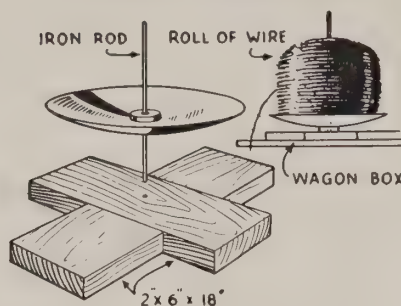
Insert the barbed wire reel so that the wire will unroll from the bottom. All you have to do is to pull on the handle as shown in the illustration and you will be able to lay your barbed wire easily and without danger of anyone getting scratched or injured. It's much easier than the old-fashioned way of unrolling the reel from a pole carried by two men.

Barbed Wire Reel



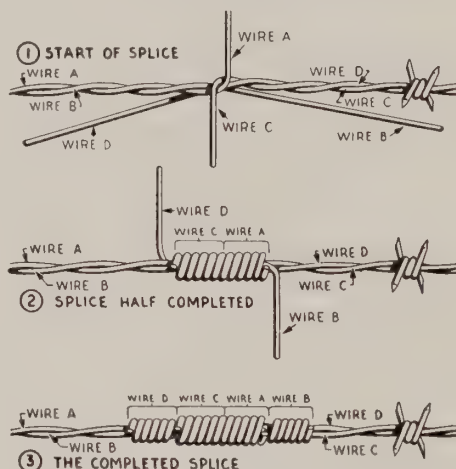
Here's a husky, easily-constructed reel for taking up barbed wire. The framework and reel are built of 2"x4" lumber and the shaft and crank can be made from a 3/4" steel rod bent to shape, or lengths of 3/4" pipe joined with 90° elbows. A piece of 1/4" rod bent and threaded as shown at the right is passed through a hole in the shaft and held in position with two nuts. The hook engages the reel, causing it to revolve when the handle is turned. A washer and pipe cap or nut on the end of the shaft keeps it from sliding out of the groove. The device can be mounted on the back of a wagon, truck or trailer and the reel is easily removed by lifting the shaft out of the notches.

Unroller for Barbed Wire



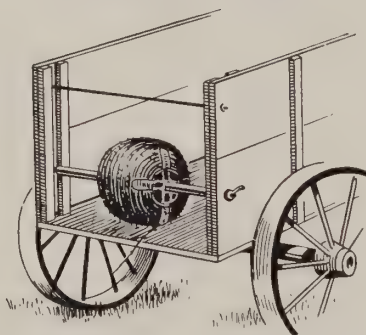
An old disc, two pieces of 2" x 6" about eighteen inches long and a piece of one inch rod or 3/4 inch pipe are the only materials required. Make a cross of the two pieces of 2" x 6", drill a hole in the center to take the pipe or rod and assemble as shown.

Splicing Barbed Wire



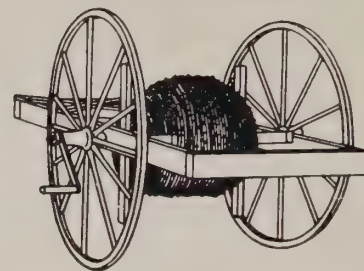
In splicing barbed wire, the most satisfactory method is to split the strands and "Western Union" each wire around the other and the opposite piece, giving each five turns separately.

Barbed Wire Stringer



An easy way to string barbed wire from the back of a wagon, truck or trailer is shown in the illustration. Use a piece of one inch gas pipe the same length as the width of the inside of the wagon or truck box. Pass the pipe through the spool. Then slide the end gate tie rod through the lower hole in the sideboard of the box, through the pipe and out through the lower hole in the opposite side board.

Reel for Old Barbed Wire



Here is a handy rig for safely handling old barbed wire when removing or building new fences.

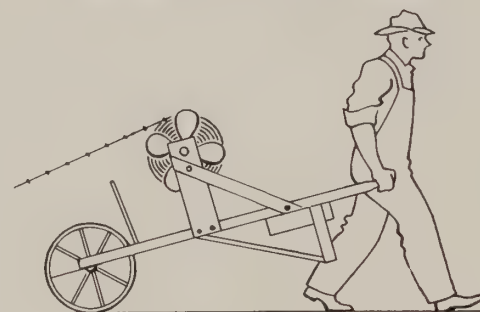
You can use any kind of old wheels but buggy wheels are to be preferred because they are lighter. The size makes no difference as long as the fingers of the reel clear the ground by about six inches.

Gas pipe or bar steel about one inch in diameter can be used for the axle. Holes are drilled into the axle for the pins which fasten the reel and crank in position, thus permitting the reel to turn when the crank is turned.

The frame of the rig is made of 2" x 6" planks spiked together as shown. Holes are drilled in the middle of the side planks to accommodate the axle. A plow clevis fastened to the front end of this frame forms a guide for the wire.

To roll up the barbed wire it is simply necessary to wrap one end several turns around the reel and then turn the crank. The rig rolls forward as the wire is wound on the reel.

One-Man Barbed Wire Unreeler



If you have an old wheelbarrow on hand, it's a simple matter to make a barbed wire unreeler that can be handled easily by one man. Place two up-rights each about a foot high, near the front of the wheelbarrow, bracing them toward the handle. Holes through the uprights will carry a shaft on which the reel of barbed wire will turn. By pulling the wheelbarrow, the barbed wire will play out automatically. A box nailed to the inside of one of the two wheelbarrow handles can serve to hold tools, staples, etc., if desired. A lid on the box may keep these from bouncing out.

LIVESTOCK SECTION

Hay Cafeteria

Self-feeding chopped hay saves labor for the cattle raiser. Cattle can loaf in a lot with an open shed for shelter. The shed can be about 18 by 60 feet, with a rack-stanchion extending full length, 8 feet in from the open front.

At harvest time, fill the space between the rack and the north wall with chopped hay through roof doors. Thus the daily allowance of dry roughage is always before the cattle. As the supply at the rack diminishes more is pushed down. Feeding requires a minimum of time and labor.

It's a Fact That—

Small flocks of sheep will be a profitable addition to the livestock program on lots of farms. They can use lots of feed that otherwise would go to waste.

* * *

Fast gains on pigs are nearly always the cheapest gains; but on cattle slow gains are sometimes cheaper than fast gains. The difference is in the fact that cattle will make moderate gains on cheap, rough feed.

* * *

Variety in brood sow rations is a good thing. Feed several grains. Feed a supplement that contains both animal and vegetable proteins. Be sure a complete list of vitamins and minerals is included. Then regulate the condition of the sow by increasing or decreasing the percentage of corn in the ration. Gilts farrow best litters when they are in medium-fat, growing condition.

Loading Chute

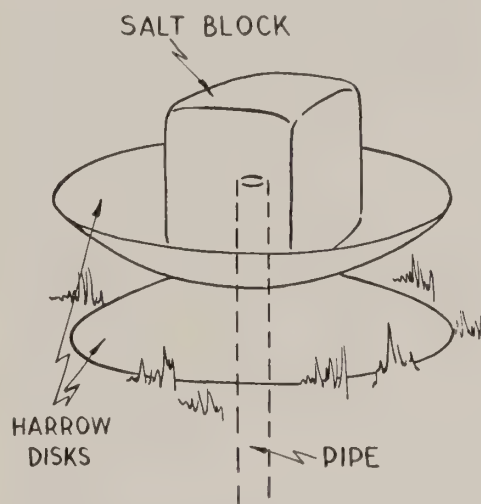
A chute over the ground-floor driveway of a basement barn can make it easier to load feed and seed for storage in the loft. An opening can be cut in the loft floor near where sacks are piled. The tin-floored chute can be drawn up out of the way when not in use.

Pitchfork Holder

You can make an effective holder for pitchforks from an ordinary strap hinge. One wing of the hinge is secured to the wall, and in the other wing drill a hole to receive the pitchfork handle. The handle is pushed through the hole from below and when released the weight of the fork automatically holds the fork against the wall. Cut off the end of the hinge and smooth the hole with a rat-tail file.

Salt Block Holder

Drive a length of pipe into the ground and drop a pair of old harrow discs over it as shown in the illustration. You will have a salt block holder that will keep the block off the ground and won't hold



water. Most salt blocks have a hole drilled in the center so they can be dropped over the pipe. Otherwise it isn't hard to make a hole. Although the pipe and discs are apt to rust badly from the salt, a coating of hard cup grease will help to prevent rusting.

Feeder Tip

When giving medicine to livestock by the drenching method, use an old milking machine teat tube over the end of a pop bottle.

Separate Calves

A calf lot divided into three small pens can help you keep different age calves separated. This will give all the calves a better chance, since the bigger ones won't bully the little ones or crowd them away from the feed.

Keep Dates

Keep a record of breeding dates so you know when pigs are to farrow. New-born pigs need immediate attention for best survival in cold weather.

Avoid Injury

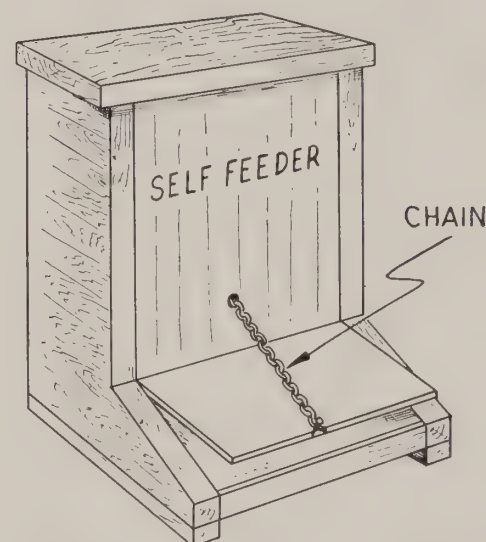
Horses forced to reach over or lean heavily on a high manger to obtain feed may develop an accumulation of watery fluid in the breast tissues. Sensible construction of the feed box will prevent this condition.

Train Heifers

It will be a lot easier to milk a heifer after she has had her first calf if she is put in the barn with milk cows awhile before she freshens. The heifers get acquainted with the barn in this way. They become familiar with the men and the sound of the milking machine before they are milked for the first time. That makes the first milking easier for both the heifers and the milker. Many dairy herd managers have found this method to be most satisfactory.

Improved Feeder

A Minnesota farmer one day saw his little pigs trying to eat from his self-feeder. But they couldn't raise the lid. So he got a short length of light chain



and fastened the self-feeder lid open 4 to 6 inches as shown. Feed was still protected from the weather. But now little pigs can eat out of the feeder for the sows.

Hog Separator

When sorting and separating a lot of hogs, you might use a paintbrush to put a spot of paint on the hips of the hogs you want to keep. When you get all the hogs marked that you want to save, open the door through which the hogs generally leave the feeding floor. You can keep on the floor every hog that's marked. In this way you will find it easy to separate hogs, even when you have to do it alone.

Calf Protection

Keep calves well bedded and out of drafts. It will help keep down pneumonia and other calf disorders.

Suggested Rations for Swine

A. Suckling Pigs, 5 to 40 lbs. (feed in creep):

1. Corn 80 lbs., tankage 20 lbs.
2. Corn 40 lbs., hominy 40 lbs., tankage 20 lbs.
3. Corn 75 lbs., middlings 10 lbs., tankage 15 lbs.
4. Corn 30 lbs., ground barley 30 lbs., ground oats (screened) 25 lbs., tankage 15 lbs.

B. Weanling Pigs, 30 to 100 lbs.:

1. Corn 80 to 85 lbs., tankage 15 to 20 lbs.
2. Corn 75 to 80 lbs., middlings 10 lbs., tankage 10 to 15 lbs.

C. Shoats, 100 to 175 lbs.:

1. Corn 85 to 90 lbs., tankage 10 to 15 lbs.
2. Corn 75 to 80 lbs., middlings 10 to 15 lbs., tankage 10 lbs.
3. Corn 50 lbs., ground barley, wheat or rye 40 lbs., tankage 10 lbs.
4. Corn 60 lbs., ground oats 30 lbs., tankage 10 lbs.

D. Hogs, 175 to 250 lbs.:

1. Corn 92 to 96 lbs., tankage 4 to 8 lbs.
2. Corn 60 lbs., ground barley, wheat or rye 35 lbs., tankage 5 lbs.

For pigs weighing 75 pounds and up, well started on pasture, the tankage may be reduced by one-half.

Skim milk or buttermilk may replace part or all of the tankage in above mixture; 2 quarts per pig on pasture to 4 quarts per pig in the dry lot should be available to replace all the tankage. With lesser amounts, the tankage in the mixture may be reduced proportionately.

E. Brood Sows

1. Corn 60 lbs., whole or ground oats 35 lbs., tankage 5 lbs.
2. Corn 60 lbs., wheat middlings 35 lbs., tankage 5 lbs.
3. (For sows nursing pigs) corn 60 lbs., oats 30 lbs., tankage 10 lbs.

Access to legume hay in rack or pasture.

4. (For sows nursing pigs) Corn 50 lbs., barley, rye or damaged wheat 40 lbs., tankage 10 lbs.

Legume hay or pasture.

Two gallons of skim milk per sow per day may be used in place of the tankage.

Trinity or Trio Mixture

To be self-fed with corn or other grains.

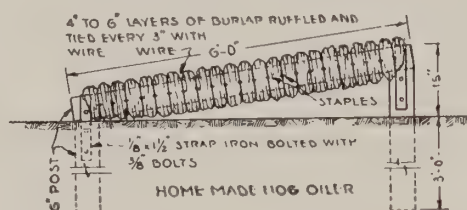
(Protein Supplement for Hogs)

Tankage 2 parts
Vegetable protein 2 parts
(Cottonseed, linseed or soy-bean oil meal)
Alfalfa 1 part

Mineral Mixture

Finely ground limestone 2 parts
Steamed bone meal 2 parts
Salt 1 part

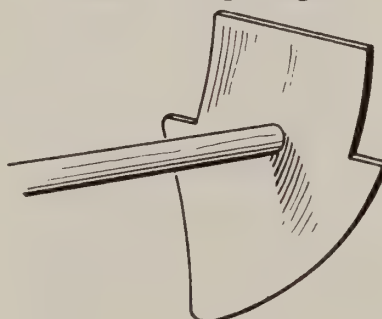
Home Made Hog Oilers



When making the common type hog oiler, made by wrapping an oil-saturated burlap bag around a post, best results will be achieved if the post is set at an angle of about 60 degrees instead of straight. This gives the hog a greater surface on which to rub. From 4 to 6 layers of burlap should be used, pushed together to form a ruffled surface and tied every three inches with wire, stapled to the post.

A further improvement is to cover a 6-foot post with the burlap layers and fasten it at an even greater angle to two posts, one end flush with the ground and the other end about 15 inches above the surface. This allows a hog to straddle the oiler at the low end and to rub against the high end, thus doing a thorough job of oiling himself.

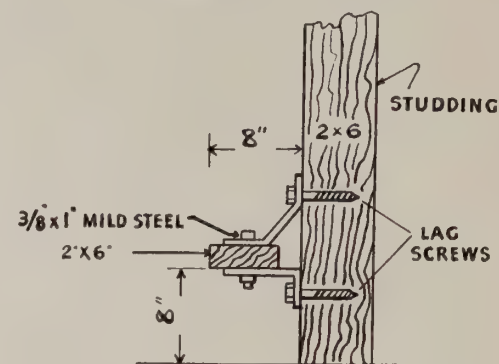
Cleaner for Hog Troughs



A good practice for any hog raiser is to provide clean troughs at all times.

A handy cleaning device may be made from a cultivator shovel by attaching a handle about 2 feet long. This tool is especially useful for the common V-shaped type of trough. On other troughs an old spade heated and shaped to the contour of the trough will serve the purpose.

Pig Fender Saves Little Pigs



With the government calling for more and more hogs under the Food-for-Europe program and with prevailing pork prices, it is both patriotic and profitable to raise more pork. While it may not be possible to farrow more sows, it is more important than ever to raise all the pigs to marketing weights.

The pig fender or guard illustrated above is one good way of preventing loss of small pigs through crushing against the wall when the sow lies down. It can easily be made of materials which are readily available and should be placed on each side of the farrowing pen.

Strong, Easily Cleaned Hog Troughs



You can make two strong, easily cleaned troughs for the slopping of hogs out of an old hot water tank. Just cut it in half, using a cutting torch or chisel, and file or grind the rough edges to avoid injury to the hogs. Supports, placed at each end, can be made of wood or from strap iron welded or riveted to the sides of the trough.

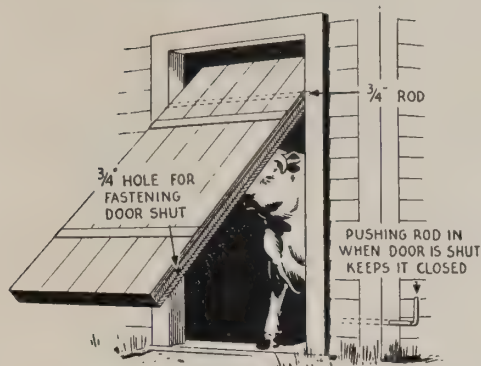
To Stop Strange Hogs from Fighting

When you must turn a strange group of hogs in with your regular group first smear used oil on both groups. An old paint brush can be used for this purpose. The oil destroys the odors by which one group of hogs would be able to detect the other group and thus gives them no cause to fight with each other.

Save Time Feeding Hogs

Allow the end of the hog trough to project about a foot outside the fence. This will not only save steps but also eliminate the possibility of the animals spilling the feed pail before it can be emptied into the trough.

Safety Door for Bulls



You don't have to take chances with a dangerous bull with this type of door. Fasten a piece of $\frac{3}{4}$ " or 1" steel rod about 4 to 6 inches wider than the doorway to the door about $\frac{1}{4}$ of the way down from the top. Heavy strap iron loops can be used for this purpose or, if the door is thick enough, the rod can be passed through it. Drill holes into the jamb on either side for the projecting ends of the bar to fit into. The door will swing either in or out when the bull wants to get through and it is not necessary to get into the pen or exercise yard to open it. If the door is near a corner, it can be held shut when closed, by drilling a hole in one side near the bottom so that it will receive a piece of $\frac{3}{4}$ " rod which can be pushed through holes drilled in the studs and door jamb.

Estimating Age of Cattle

From a practical standpoint the age of cattle is usually determined by the horns, the length of the tail, and the general appearance of the animal. However, the time of eruption of the teeth is a rather accurate guide.

There are four pairs of temporary incisors in the lower jaw that usually appear during the first few weeks of life. They are replaced by an equal number of permanent incisors that erupt about as follows:

Teeth	Age of eruption in months
First or middle pair incisors...	15 to 18
Second pair incisors.....	24 to 30
Third pair incisors.....	33 to 36
Fourth pair incisors	42 to 48

Breaking Sucking Cows

Some cows can be successfully broken of the habit of sucking themselves with the impediment of a horse collar around the neck. Try the treatment for a period; then remove the collar. If the cow attempts to return to her old habits, replace the collar. Repeat until cure is effected or cow indicates a hopeless case.

Suggested Rations for Beef Cattle

Average daily rations for fattening calves, starting at 400 lbs. weight and gaining 400 to 500 lbs. in 180 to 240 days.

No. 1

Corn or barley or part oats	7.5 lbs.
Cottonseed or soybean or linseed oil meal	1.3 lbs.
Corn silage	18.0 lbs.
Legume or mixed hay.....	3.5 lbs.

No. 2

Corn or barley or part oats ...	11.0 lbs.
Cottonseed or soybean or linseed oil meal	1.3 lbs.
Corn silage	8.0 lbs.
Legume or mixed hay	3.0 lbs.

No. 3

Corn or barley or part oats ...	12.0 lbs.
Cottonseed or soybean or linseed oil meal	1.1 lbs.
Legume or mixed hay or some corn stover	6.0 lbs.

Equal parts special steamed feeding bone meal and granulated salt should be available at all times, not in the feed.

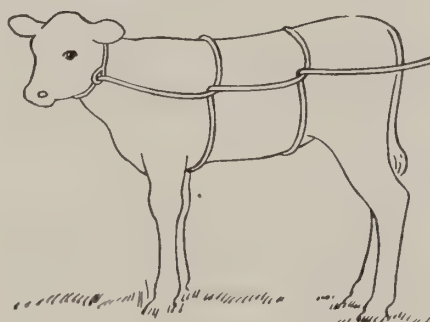
Molasses may replace grain in the above rations. More than 2 lbs. per day of beet molasses may be too laxative.

Many other feeds may be substituted for feeds of similar composition in these rations.

The longer the feeding period the more roughage can be used in the beginning to conserve grain for the finish, however, gains of less than 40 pounds per month in the beginning or 60 pounds per month toward the finish are likely to be costly. The higher the grade of cattle, the better ration and the longer the feeding period advisable.

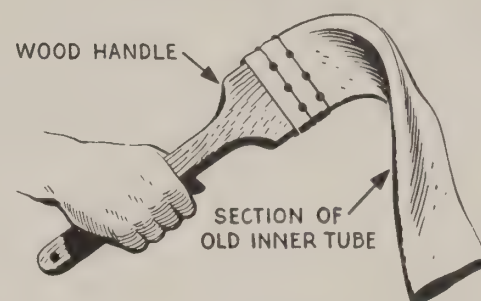
Yearling steers may be fed similar rations to those above with increased amounts according to weights of the cattle. Coarser feeds, such as shock corn, corn stover, non-legume hay, etc., may be used more readily by these older cattle.

Rope Trick Throws Cattle



To throw a calf or bull, put a rope around the neck, and a half-hitch around the flanks as shown in illustration. Pull on the rope and the animal will come down easily.

Livestock Slapper



Here's a simple little device that will keep livestock moving when driving or loading into a truck or trailer without running the risk of bruising which attends the customary use of a club, stick, stone or fork. Just take a piece of an old inner tube about two feet long and a board wide enough to fit inside the tube. Whittle one end of the board down to form a comfortable handle and insert the other end inside the tube about four inches. Fasten the tube securely to the handle with wire and tacks and you will have a humane slapper that will keep the animals moving just as effectively as a club. A hole drilled in the end of the handle permits the slapper to be hung on a convenient nail.

Suggested Rations for Dairy Cattle

The following mixtures are suitable when fed with good legume hay:

(1)

200 lbs. corn
300 lbs. oats
200 lbs. bran
300 lbs. soybean oil meal

(2)

200 lbs. corn
200 lbs. oats
200 lbs. bran
200 lbs. linseed oil meal
200 lbs. soybean oil meal

The corn and oats should be coarsely ground.

The following concentrate mixture is recommended:

600 lbs. ground corn
200 lbs. wheat bran
200 lbs. linseed meal or soybean oil meal

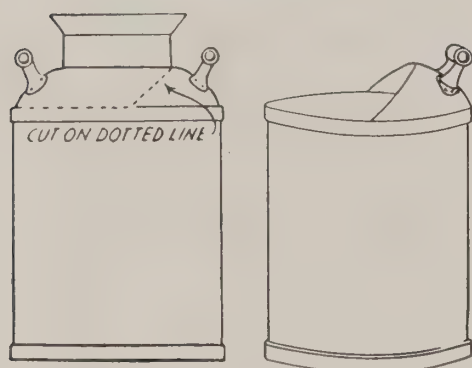
Up to one-half corn may be replaced with oats.

(From "Raising Dairy Calves", University of Wisconsin Extension Service Circular 305.)

Holder for Calf's Feed Pail

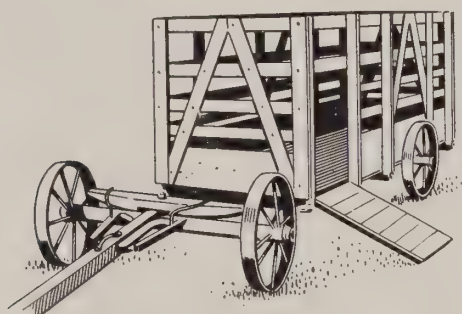
Saw an old barrel in half and cut a round hole in the top just big enough to hold a calf's feeding pail. This will prevent spilling of the feed.

Use for Old Milk Cans



Don't throw away your old milk cans. With slight alterations they can be made into handy containers for carrying feed and for other uses about the farm. Trim them as shown in the sketch. After cutting off tops be sure edges are bent in so as not to be dangerous. One of the advantages of these containers are that they are easy to clean.

Animal Ambulance



To avoid danger of infection when moving sows and litters to pasture, one farmer uses the animal ambulance illustrated above. The body is built on an old wagon frame or an old automobile chassis. It should be equipped with small wheels so that the animals can climb into it easily. The gate, when let down, forms a ramp for loading and unloading.

Preventing Waste of Straw

To keep cattle and other livestock from spreading and wasting straw or hay in the stack, place ordinary woven wire fencing around the base of the stack.

Avoid "Double Dosing" of Stock

When giving medicine to such livestock as sheep on drenching days, the danger of administering a double-dose to one animal can be avoided by marking the sheep across the top of the head with a piece of ordinary carpenter's chalk before releasing.

Estimating Age of Sheep

The time of eruption of the permanent incisors provides a rather accurate method of determining the age of sheep. There are 4 pairs of them, all in the lower jaw, and they may be expected to come in about as follows:

Teeth	Age of eruption in months
First or middle pair.....	12
Second pair	24 to 27
Third pair	33 to 37
Fourth pair	48

Precautions at Lambing Time

If all of the lambs are to be saved give strict attention to the following recommendations:

1. Have lambs born in clean quarters.
2. Apply tincture of iodine to the navel soon after birth.
3. Do not allow the lambs to become chilled.
4. See that the ewe has milk, that her udder is normal, her teats open and that the lamb gets milk.
5. Provide reasonable protection from severe weather until the lambs are a few weeks old.

Controlling Greedy Horses

A large smooth stone in the middle of the feed box will effectively slow down horses that eat too rapidly or throw their feed out of the box.

Stop Horse Chasing Livestock

If you have a horse that seems to enjoy the sport of chasing other livestock in the pasture, try this one. Fasten a short chain or plow clevis to the horse's front leg behind the knee. This should effectively discourage the chasing habit.

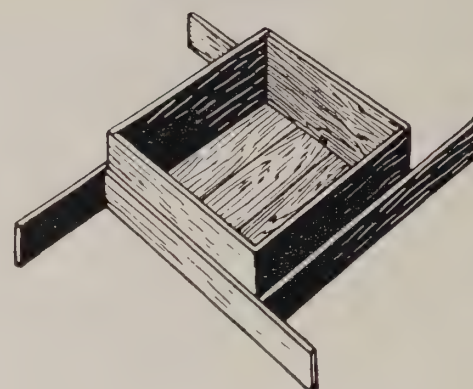
Stops Chewing on Mangers

To stop horses from chewing the upper edge of wooden mangers, staple smooth wires, one on the top inside edge and another on the top outside edge. This will effectively discourage the chewing habit.

Stop Cows Splashing Water

If you have trouble with your cows lapping drinking water and splashing it into the feed and bedding, you can correct the situation. Put an ordinary screen wire horse muzzle into the drinking cup. The upper rim of the muzzle should be caught up under the inner edge of the drinking cup.

Stock Salt Box

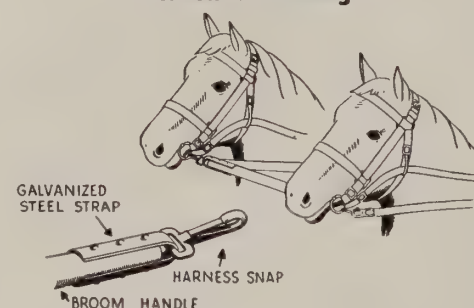


You can't always be assured of a clean supply of salt handy to your stock at all times if the salt box is usually upside down in the barnyard. An ordinary box invariably is overturned by stock in getting at the salt block.

However, you can overcome this difficulty by nailing four boards around the outside of the box, arranging them so that one end of each board is flush with a corner of the box, and the other end projects eight or ten inches. Nail a board in this manner to each side of the box, progressing around the box so the projection of each board is always to the right. This arrangement makes a broad base for the box which, in most cases, is sufficient to keep it from being upset.

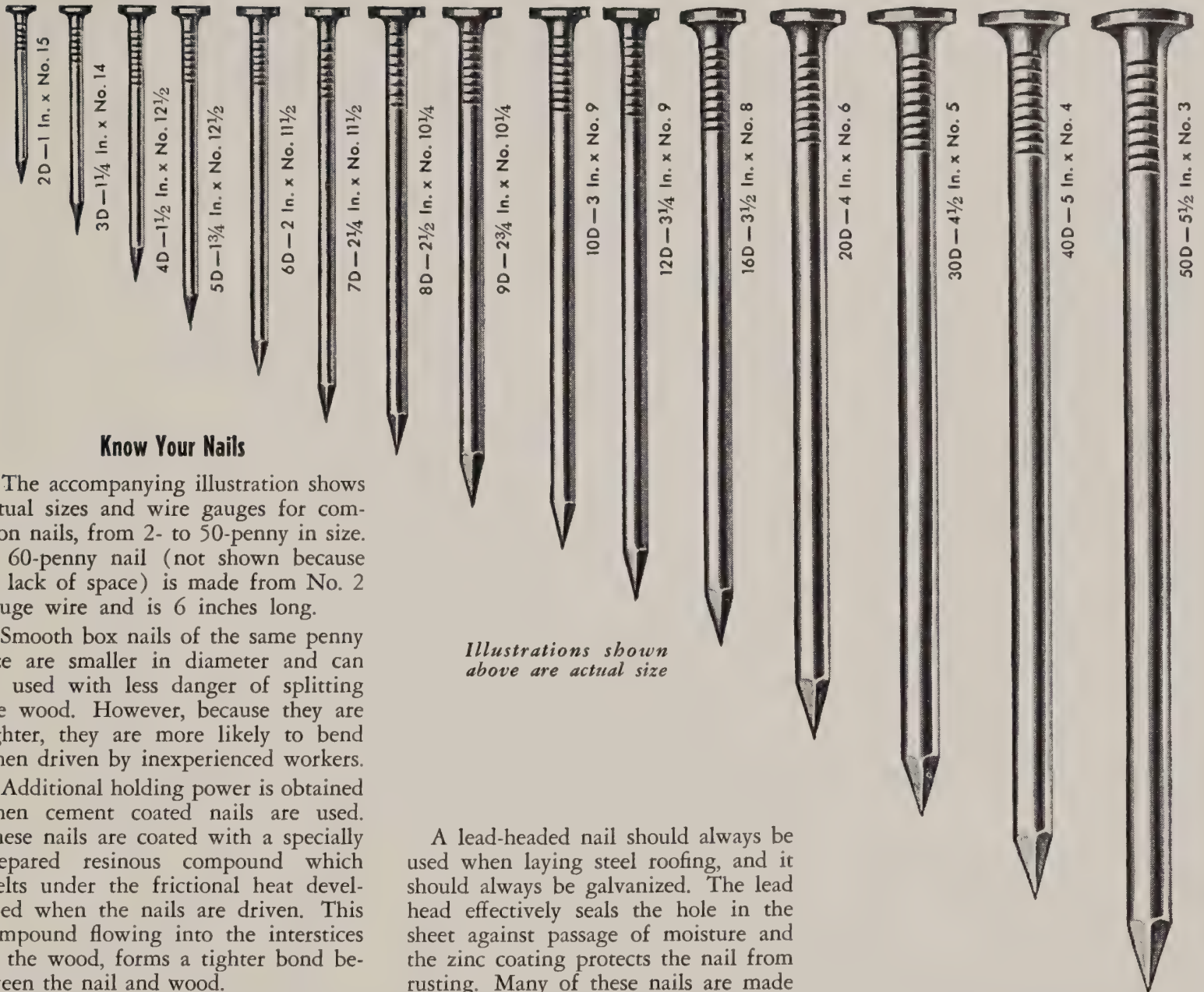
If this is still insufficient, take four pieces of 2"x6" four feet long and nail them together in the same way as the sides were added to the box above, leaving about a one-foot square in the center. Put a bottom in the center square for the salt, and you have a heavy, well-supported salt box that rarely, if ever, will be overturned by stock. In most cases, the first suggestion is effective enough.

Prevent Horses Eating Corn When Cultivating



Using a narrow strip of heavy gauge galvanized steel for straps, fasten a harness clip to each end of a piece of broom handle about 24 to 30 inches long. When using a horse-drawn cultivator for corn, snap one of the harness snaps to the inside bit ring of each horse. This will keep the horses from eating the corn.

FARM BUILDING SECTION



Know Your Nails

The accompanying illustration shows actual sizes and wire gauges for common nails, from 2- to 50-penny in size. A 60-penny nail (not shown because of lack of space) is made from No. 2 gauge wire and is 6 inches long.

Smooth box nails of the same penny size are smaller in diameter and can be used with less danger of splitting the wood. However, because they are lighter, they are more likely to bend when driven by inexperienced workers.

Additional holding power is obtained when cement coated nails are used. These nails are coated with a specially prepared resinous compound which melts under the frictional heat developed when the nails are driven. This compound flowing into the interstices of the wood, forms a tighter bond between the nail and wood.

Galvanized nails should always be used when longest service and protection against rusting is desired, as in the case of laying wood shingles, composition or steel roofing, or similar uses. The zinc coating protects the steel against corrosion.

Blued nails offer no additional protection against rusting, but are clean and sterile nails provided for lathers and other workers who carry them in their mouth while at work. No other nails (especially galvanized) should be placed in the mouth.

Annealed nails are generally employed where it is desirable to clinch the point after driving to give increased holding power. They are made sufficiently soft to clinch readily, yet are stiff enough to drive without undue difficulty.

Illustrations shown above are actual size

A lead-headed nail should always be used when laying steel roofing, and it should always be galvanized. The lead head effectively seals the hole in the sheet against passage of moisture and the zinc coating protects the nail from rusting. Many of these nails are made with a screw shank, which greatly increases the holding power.

Roofing Nails

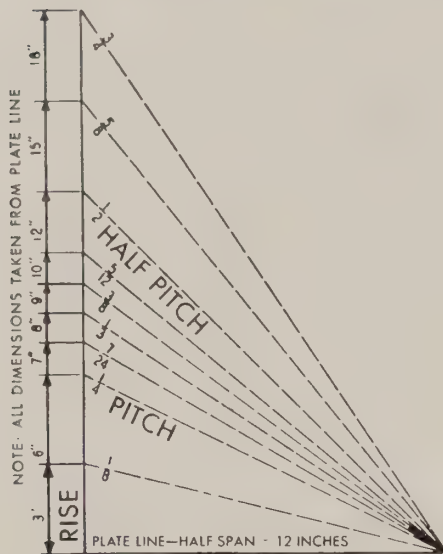
All nails for use on roofing sheets should be galvanized. The necessity of sealing nail holes in metal roofing against the passage of moisture should never be disregarded. It is important, therefore, that nails with lead heads or an equivalent feature be used. Tests have proved the superiority in holding power of the drive screw type of nail. Other things being equal, the holding power of a nail is proportional to the area of its surface in contact with wood. For this reason two-inch nailing strips are recommended to obtain best anchorage. It is generally safe to figure on about one pound of nails for each square (100 square feet) of roofing.

Light Reflection Values

Briefly stated light reflection is simply the turning back of light which strikes a wall, a ceiling, or other object—light which is neither transmitted nor absorbed. Light is absorbed by dark colored or oiled surfaces. Hence, black has a reflection value of only 2 per cent, while white flat paint reflects 89 per cent of the light striking it. Comparative reflection values of different colors are given in the following table:

White 89%	Buff 63%
Ivory 82%	Pale Green . . . 59%
Canary Yellow . . 77%	Shell Pink . . . 55%
Cream 77%	Bright Sage . . . 52%
Caen Stone . . . 76%	Silver Gray . . . 46%
Orchid 67%	Olive Tan 43%
Cream Gray . . . 66%	Forest Green . . 22%
Ivory Tan 66%	Coconut Brown 16%
Sky Blue 65%	Black 2%

To Figure Roof Pitch



The pitch of roofs having straight slopes, such as gable roofs, should be determined by dividing the rise by the span, the span being the total distance between the outer edges of the plates on the side walls. In other words, divide the rise, per 12" of horizontal distance by 24. A full pitch gable roof is one with the rise equal to the span. A half pitch gable roof is one with the rise equal to half the span. Example:—figure the pitch of a gable roof having a rise of 6" to a half span of 12". Thus 6" (the rise) divided by 24" (the span) equals 6/24, or $\frac{1}{4}$ pitch. The height of the ridge will be $\frac{1}{4}$ of the span of the building.

On a shed roof building the distance between the outer edges of the plates on the side walls will obviously be a half span for the purpose of figuring pitch.

Maintenance and Painting of Steel Roofing

All buildings require care regardless of what materials they are constructed. This applies, likewise, to sheet metal. Roofing receives more punishment than any other material on the outside of a building and for this reason it should receive periodical inspection and necessary attention.

Steel itself is a "strength metal," and, if properly applied and protected, as a roofing material it will last almost indefinitely and be an effective barrier against fire and storm.

All steel roofing, whether galvanized or not, should be painted. The galvanized coating will resist corrosion for varying lengths of time depending upon climatic conditions. In dry climates a galvanized roof might not need

painting for many years. In other climates, particularly where the air is moist or full of smoke and corrosive gases, it might be advisable to paint it after it has "weathered" for about six months. This assures better adherence of the paint.

Those who choose to wait until painting is necessary should not delay painting after the first signs of rust are visible.

A roof should be thoroughly clean before painting. All spots covered with loose rust should be brushed off with a wire brush. Loose nails should be removed and replaced with new ones, driven at an angle away from the old nail hole to assure good holding power.

Roofs should never be painted unless absolutely dry. It is a very poor practice to try to paint just after a rain or when there is dew on the roof. Furthermore, if it seems that a storm is approaching, painting should be discontinued so the paint may set.

There are a number of good types of paint on the market which are suitable for use on galvanized steel sheets. With lead paints a rust-inhibiting or primer coat should first be applied for best results. Aluminum paint, used extensively in some parts of the country, also requires a primer.

Metallic zinc paint is being used increasingly on farms and has given excellent results. Its performance has been especially good even where the galvanizing has disappeared. The commercial formula best suited for application to galvanized sheets exposed to the weather calls for 80% zinc dust and 20% zinc oxide mixed with a suitable vehicle such as linseed or soy bean oil. This type of paint is furnished ready-mixed by a number of leading paint manufacturers.

Metallic zinc and paint spreads easily, a gallon covering about 800 square feet. It has good hiding properties and forms a tough, adherent coating. This paint is most commonly used in its natural color—a battleship gray—although some producers now furnish the paint in other colors.

To Find the Amount of Paint Required For a Given Surface

It is impossible to give a rule that will apply in all cases, as the amount varies with the kind and thickness of the paint, the kind of wood or other material to which it is applied, the age of the surface, etc. The following is

an approximate rule: Divide the number of square feet of surface by 200. The result will be the number of gallons of liquid paint required to give two coats; or divide by 18 and the result will be the number of pounds of pure ground white lead required to give three coats.

Farm Building Roof Types

The more common roof shapes used on farm buildings are:

Shed Roof, also called "lean-to." Economical and sheds water well but is suited only for short spans of 10 to 20 feet as in a poultry house or garage. Wider spans require deeper rafters to give adequate strength.

Gable Roof. A simple, economical construction, widely used. Stronger than the shed roof and suitable for wider spans. Each rafter spans only half the structure and leans against its mate. Lower ends of rafters tend to spread apart and must be restrained by joists, collar beams or tie rods. Pitch is computed by dividing the rise by the span. Pitches in common use are $\frac{1}{4}$, $\frac{1}{3}$ and $\frac{1}{2}$.

Broken Gable. This is a gable type roof with unequal spans and either different roof pitches or different wall heights on opposite sides of the ridge. Provision is necessary to prevent spreading as in the gable roof. Most frequently used on buildings housing poultry, hogs and machinery.

Monitor. A double gable, one above the other. Additional vertical walls provide added window space to admit more light. More difficult to construct and permits greater heat loss.

Half Monitor. Provides a straight gable on one side and monitor on the other. Monitor usually faces in direction of greatest light. Advantages and disadvantages are the same as those of the regular monitor type.

Hip Roof. A gable type roof with corners cut off at the ends of the ridge. Pitch is usually the same on all four sides. If the building is square the roof will form a pyramid. More economical than the regular gable but the capacity is decreased.

Gambrel. Similar to the gable type but with an extra break midway in the rafters. Allows for greater storage volume as in the hay loft and is more economical as shorter rafters can be used. Provides greater slope for shedding water where most needed. Each

corner is braced and a collar beam placed just below the ridge.

Gothic. Constructed with two curved rafters to form a three hinged arch. Self supporting and requires no bracing. Provides maximum storage space and has suitable ridge for a hay rack carrier. Streamlined curves make it naturally water- and wind-resistant. Can be constructed with bent rafters made of 6 1"x4" boards well nailed and bolted, or glued, or with sawed, curved rafters made of four plies of 1" material nailed together and sawed to shape. If the latter construction is used, care must be taken to stagger joints in the different plies. Still another type of arched rafter is built of two inch planks on edge bolted together to form a laminated diamond-shaped pattern which is supported at the walls by tie rods, buttresses or piers.

Round Roof. A low cost type of combined roof and side wall construction used largely for machinery sheds, airplane hangars, etc. This is a comparatively new type of building but is rapidly gaining in popularity. The framework consists of laminated bent rafters continuous from foundation to foundation. As rafters are bolted to the foundation at either side, the structure is highly wind resistant. Rafters are made of one inch lumber bent to shape in a template and rough lumber can be used for this purpose. No internal supports are required and maximum storage space is provided. This type of building is usually covered with corrugated steel sheets and, since there are no eaves, application of the sheets is simplified.

Flat Roof. This was formerly a leaky, troublesome construction but improvements in materials have made it more satisfactory. Construction is simple, strength is secured by deep rafters, trusses or reinforced concrete and waterproofing is obtained by the use of roll roofing, tar or asphalt, and gravel. Attic space is limited but heat penetration in summer can be prevented by insulation.

Keep Silos Repaired

An abundant supply of good silage is a big help in keeping up satisfactory milk production. But, the silo must be in good condition to provide the best storage. Leaky silos let in air, and this air makes silage mold, according to Stan Witzel, University of Wisconsin agricultural engineer.

The starting point is a good inside

cleaning job. Scrape off all scraps of old silage clinging to the walls, because if they're left in they act as "seed" to start spoilage.

Concrete and Masonry Silos

In concrete silos, cracks generally show up plainly if there are any. They need to be chiseled out deep enough so they can be patched.

Tile or masonry silos call for a close inspection, since cracks are most likely to be found along the mortar joints. Chipping out the cracks half an inch deep and repointing them with good mortar will make them tight again.

If the silo shows a crack from the ground-line right on up, it takes more than patching to fix it, since it's apt to be so weak that it can burst from the pressure of the silage. Here the thing to do is to reinforce it with hoops before patching.

As the final step in the repair job, it is good practice to coat the inside with cement plaster or a thick cement wash. The silo must be thoroughly cleaned first, to remove loose particles.

Wood Silos

Sometimes, all that is required to keep a wood stave silo in usable condition is to clean it and tighten the hoops.

If a wood silo is twisted and sagging, it needs to be straightened. This can be done by loosening the hoops, pulling it back into shape with a block and tackle, and then tightening the hoops again.

After straightening the silo, many farmers put on some of the new wide wooden hoops to help prevent twisting in the future. Guy wires also help to keep the silo straight.

Wood staves that are in poor condition should be replaced with new ones. If the lower ends of the staves are rotted and fit the foundation poorly, the ends can be cut off and the whole silo lowered slightly.

Tight-Fitting Silo Doors

No matter what type of silo is on the farm, it needs tight-fitting doors. If they can't be repaired easily, one way to avoid air leakage here is to put building paper inside them as each section is put in at filling time.

Prevent Insects in Stored Grain

While it is possible to kill weevils, bran beetles, and other insects which infest stored grain by fumigation, the best measure for preventing infestation

and damage by these pests is sanitation. Since most insect damage is caused by failure to clean out the bin before new grain is stored, the following preventive measures are suggested.

1. Grain bins should be cleaned out as long in advance of grain harvest as possible.

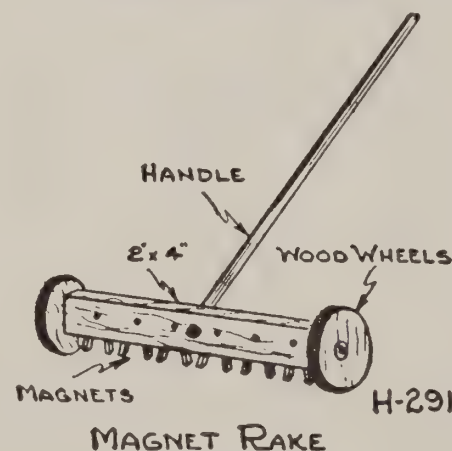
2. Old grain should be removed and the bins and floors swept and sprayed with a contact insecticide. (J. J. Davis, head of the entomology department at Purdue University, suggests a mixture of one gallon of dormant tree spray oil and three ounces of household lye in nine gallons of water.)

3. Special care should be taken to spray behind bin linings and between partitions where loose grain accumulates.

4. Sacks of feed and similar material which are stored next to or near grain bins often are heavily infested and should be disposed of, or at least removed some distance from the grain storage bins.

5. Grain should not be stored until it is in a sufficiently dry condition, because damp grain promotes mold, and mold promotes grain beetle increase. Beetles, in turn, are largely responsible for heating of grain.

Magnet Rake for Nails



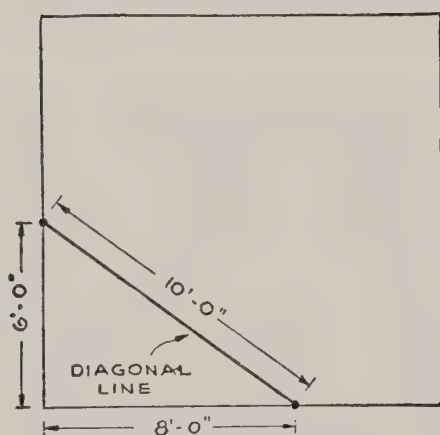
This diagram shows an Idaho 4-H project for keeping the farm driveway and barn lots free of loose nails and bits of wire and sharp tin which might damage tires and bare feet. Half a dozen horseshoe magnets from an old Ford magneto are bolted to a 2 by 4, with wood wheels at the ends and a handle. Running this over the driveway and yard every few days and dumping the collected material into a scrap box will save many a puncture and help the war effort. This is especially important after roofing or remodeling work has been done.

Laying Out the Building Foundation

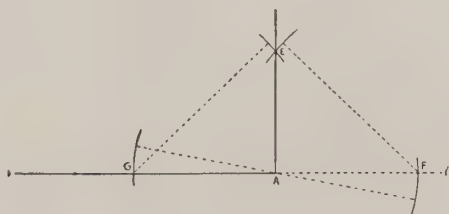
When erecting a new building, it is important that the foundation be square, of correct dimensions, and perfectly level at the top.

The following methods are suggested for laying out the foundation. Materials needed are: a steel or cloth tape 50 or 100 feet long, a dozen spikes, a ball of heavy twine and a number of smooth, well-sharpened stakes. If proper care is exercised in all operations described and measurements are carefully made and checked, these methods will assure an accurate, square foundation.

Squaring the Corners

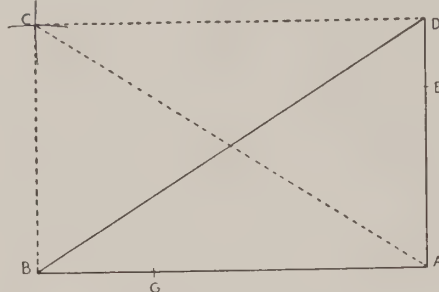


To square forms for a cement floor or foundation, start at the corner and measure eight feet along the side, and mark the spot. Then start from the same corner and make a mark six feet from the corner along the end. If it measures exactly ten feet diagonally across from one mark to the other, the structure is square.



The Compass Method. Having established line AB and corner A, extend line AB beyond point A to Y. With A as a center, and using a strong non-stretchable cord, strike an arc on the ground on the lines AB and AY. Drive a spike at each point where the arc crosses the line (G and F) and using these points as centers, and with a slightly larger radius, scratch two additional arcs in the ground. A line drawn from corner A through the point where these two arcs cross, E, will be at a right angle to line AB, producing a square corner at A. This line may be extended to any length by means of a tight line.

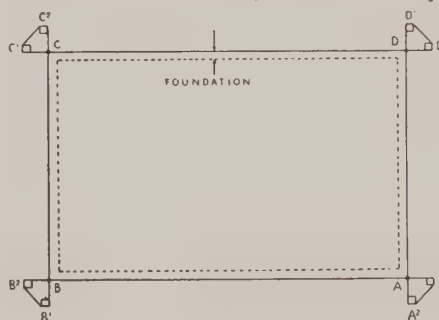
While any length of cord can be used in making the arcs, a good figure is 15 feet for the first two and 20 feet for the second two.



Squaring Other Corners. Having extended the line AE to obtain the proper length for the side of the building, drive a spike at that point (D). Now with D as the center and using a non-stretchable cord of the same length as AB, scratch an arc on the ground at a point near where it is judged the fourth corner will be. Then, with B as the center and a length of cord equal to the dimension AD scratch another arc intersecting the first. The point at which the two arcs intersect, C, locates the fourth corner, where a spike may be driven. As a means of checking results, measure diagonals BD and AC. If these are equal, all corners are square and all dimensions are correct.

COMPLETING THE LAYOUT

As spikes A, B, C, and D mark the corners of the foundation and since these will be removed when the trench or excavation is made, it is necessary to



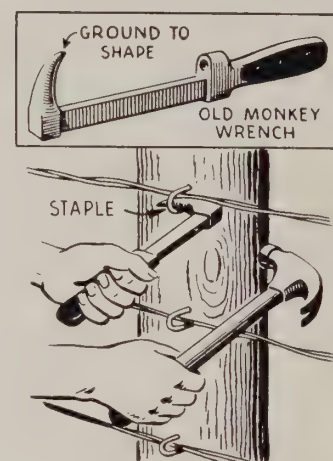
preserve these points. This can be done by driving stakes A^2 and D^1 about three feet beyond points A and D respectively and so located that a line stretched between them will pass directly over the spikes driven into the ground at these points. Place additional stakes at D^2 and C^1 , C^2 and B^1 and B^2 and A^1 , each located so that a line stretched between them will pass over the spikes. The points at which the lines cross mark the true corners of the building and the layout has been completed, ready for the excavation. After the excavation has been completed, it is possible to locate the corners at the bottom of the excavation by dropping a plumb bob from the points where the cords cross.

To Test a Scaffold Plank

Block plank to be tested up a foot from the ground placing the supports the same distance apart as the scaffold supports on which it is to be used. Now load the plank with 3 times the load it will be required to support in actual use, placing load as close to center as possible. At the slightest sign of weakness, discard the plank and mark it so no one else will use it as a scaffold plank.

National Safety Council Safety Instruction
Card No. 15.

Staple Puller Made from Old Wrench



The illustration shows a very efficient staple puller which can be made from an old monkey wrench in a few minutes.

Merely remove the lower or movable jaw and screw of the wrench and grind the upper or fixed jaw to a point on a grindstone or emery wheel as shown. The lower illustration shows how the puller is used.

Binder Twine Holder

A temporary twine holder can be made by using a sack. Put the ball in a sack, tie the sack loosely, leaving the loose end of twine projecting. This will help prevent the twine from unwinding and becoming tangled.

Repair Link for Log Chain



You can quickly make a temporary repair of a broken log chain or join two short chains of the same size. Cut two strips of heavy strap iron a little longer than one link. Bore holes at each end of the straps large enough to take short bolts the same diameter as the material which form the links of the chain. The bolts are drawn down tight enough to grip the chain. The bolt ends should be riveted to prevent the nuts from working loose.

Barn Unit Dimensions

Consult local dairy ordinances before constructing the dairy unit. The dimensions given below will serve as a guide, however, in making preliminary plans.

FOR DAIRY CATTLE

Mangers. The mangers should be from 20 to 30 inches wide. The front curb should be 6 to 20 inches high and the rear curb 6 to 8 inches high.

Standard Dairy Stalls

Breeds	Width	LENGTH OF STALL*		
		Small	Medium	Large
Holstein.....	3'-6" to 4'-0"	4'-10"	5'- 2"	5'- 8"
Shorthorn.....	3'-6" to 4'-0"	4'- 8"	5'- 0"	5'- 6"
Brown Swiss....	3'-6" to 4'-0"	4'- 8"	5'- 0"	5'- 6"
Ayrshire.....	3'-6" to 3'-8"	4'- 6"	5'- 0"	5'- 6"
Guernsey.....	3'-4" to 3'-6"	4'- 6"	4'-10"	5'- 4"
Jersey.....	3'-4" to 3'-6"	4'- 4"	4'- 8"	5'- 0"
Heifers.....	2'-9" to 3'-2"	3'- 8"	3'-10"	4'- 2"

* Stall length from center of curb to edge of gutter.

For adjustment in stall length to meet the requirements of cows of different sizes, either adjust the stanchion forward or backward as may be required or taper the stall platform, making it a few inches wider at one end than at the other. With the latter method, shorter cows can be assigned to stalls at the short end of the platform.

Gutters. Gutters should be 16 inches wide. Next to the platforms, the depth should be 8 inches and next to the litter alley, 5 inches. A slope of one inch in 10 feet of run should be provided for drainage but the runs should not be more than 25 feet in length to avoid too great gutter depth. One drain can serve two runs of that length, or 50 feet, by having each run slope to the center.

Litter Alleys. When the cows face outward, the litter alley should be wide enough for a driveway, or 8 to 9 feet. The center of the alley should be one inch higher than the sides to provide drainage. For the face-in arrangement, the litter alleys should be 4½ to 5 feet wide.

Feed Alleys. If feed trucks are to be used, provision for their width should be made in planning the width of the alleys. They should be at least 4 feet wide, however.

Maternity Pens. Provide at least 100 square feet of floor area for each maternity pen. Maternity pens should not be less than 8 feet wide.

Calf Pens. A minimum of 16 to 20 square feet of floor space should be provided for each calf. Calves over six months of age will require 25 to 35 square feet of floor space. Space stanchions 20 to 24 inches apart.

Bull Pens. Bull pens are usually located in a corner of the barn to conserve space and to isolate the bull as much as possible. Provide the same amount of floor space as for maternity pens and arrange for a door opening directly into the exercise lot.

FOR HORSES

Box Stalls.—Box stalls should be 10 feet wide and 12 feet long.

Standard Horse Stalls are 5 feet wide and 9 to 10 feet long, including 2 feet for the manger.

Feed alleys should be 3 to 4 feet wide and a space 6 feet wide should be provided for the rear alley.

FOR BEEF CATTLE

Make available 40 to 60 square feet of floor area and 30 inch manger or feed rack space for each animal not confined to a pen.

FOR SHEEP

A floor space of 12 to 16 square feet should be available for each head of sheep.

FOR HOGS

Farrowing pens should be approximately 8 feet by 8 feet in dimensions or from 50 to 70 square feet in area.

Floor Space Required for Poultry

	Sq. ft. per bird
Heavy or general purpose breeds..	4
Light breeds	3
Baby chicks	1/3

In mild climates when birds are kept in colony houses and have access to free range the space required may be reduced to 3 sq. ft. for general purpose breeds and 2½ sq. ft. for Leg-horns.

Allowance for Laps on Corrugated Sheets

An approximate allowance for laps in standard corrugated steel roofing is 20 to 25 per cent, and in standard siding, 12 to 18 per cent of the area to be covered.

The usual lap is 1½ corrugations on the side and 6 inches on the end for roofing, and 1 corrugation on the side and 4 inches on end for standard siding.

The accompanying table is of standard 1¼ and 2½-inch corrugated sheets, 96 inches long, and shows approximately the square feet required to cover one square (100 sq. ft.) with various end laps.

Width Corru- gation, Inches	Formed Width, Inches	Cover- ing Width, Inches	Side Lap, Corru- gations	End Lap, Inches			
				3	4	5	6
				Square Feet Required			
1¼	26	24	1½	112	113	114	116
2½	26	24	1	112	113	114	116
2¼	27½	24	1½	118	120	121	122
2½	26	21½	2	126	127	129	130

Ventilation Prevents Decay

Adequate ventilation under buildings will help protect floors and other wooden parts near the ground from decay fungi. These ventilators inserted through foundation walls are usually closed in winter but should be left open in warm weather. Fungi which cause lumber to rot grow only when the wood is highly moist. No wood should be actually in contact with the soil and for adequate ventilation there should be two openings in the foundation walls through which the moist air can move out. Four-inch drain tile, one on each side, are satisfactory for this purpose and should be screened against rodents. This of course applies only to houses or buildings with wood floors and no basement.

Safe Center Loads for Scaffold Planks

Safe Load in Pounds for Select Common Eastern Spruce, Select Common Norway Pine and Select Structural Eastern Hemlock

Span in Feet	Size of plank, in inches		
	2x8 Dressed to 1½x7½	2x10 Dressed to 1½x9½	2x12 Dressed to 1½x11½
6	202	256	309
8	151	192	232
10	121	153	186
12	101	128	155
14		110	133
16			116

Span in Feet	Size of plank, in inches		
	3x8 Dressed to 2½x7½	3x10 Dressed to 2½x9½	3x12 Dressed to 2½x11½
6	526	667	807
8	395	500	605
10	316	400	484
12	263	333	404
14	225	286	346
16	197	250	303

Above values are for planks supported at the ends, wide side of plank face up, and with loads concentrated at the center of the span.

For loads uniformly distributed on a wide surface throughout the length, the safe loads may be twice those given in the table.

Loads given are net, and do not include the weight of the plank.

If select structural Coast Region Douglas Fir, merchantable structural longleaf Southern pine, or dense structural square edge and sound Southern pine are used, above loads may be increased 45 per cent.

(From National Safety Council Safety Instruction Card No. 120)

Estimating Table for Steel Roofing Products

Length of Sheet	1½-2-2½ & 3" Corrugated 26" Wide		2½" Corrugated 27½" Wide		All Forms of V-Crimp, Republic Triple Drain, Weatherboard Siding All 24" Wide	
	No. of Sq. Ft. Per Sheet	No. of Sheets Per Square	No. of Sq. Ft. Per Sheet	No. of Sheets Per Square	No. of Sq. Ft. Per Sheet	No. of Sheets Per Square
5 Ft.	10.833	9.231	11.46	8.73	10.00	10.000
6 Ft.	13.000	7.692	13.75	7.27	12.00	8.333
7 Ft.	15.167	6.593	16.04	6.23	14.00	7.143
8 Ft.	17.333	5.769	18.33	5.46	16.00	6.250
9 Ft.	19.500	5.128	20.63	4.85	18.00	5.556
10 Ft.	21.667	4.615	22.92	4.36	20.00	5.000
11 Ft.	23.833	4.195	25.21	3.962	22.00	4.545
12 Ft.	26.000	3.846	27.50	3.64	24.00	4.167

To find the number of sheets in a given number of squares, multiply the number of squares (100 square feet) by the number set opposite the length of sheets required, in the column showing style of roofing or siding to be used. The result will be the number of sheets required, without allowance for end or side laps.

Recommended Concrete Mixtures*

Figures below are based on the use of average moist sand.

Application	Gallons Water per Sack of Cement	Cubic Feet per Sack of Cement		Largest Size of Gravel Inches
		Sand	Gravel	
Most farm construction such as floors, steps, basement walls, walks, yards pavements, silos, grain bins, water tanks.	5	2¼	3	1½
Concrete in thick sections and not subject to freezing. Thick footings, thick foundations, retaining walls, engine bases.	5½	2¾	4	1½
Thin reinforced concrete milk-cooling tanks, fence posts, thin floors, most uses where concrete is 2 to 4 inches thick.	5	2¼	2½	¾
Very thin concrete such as top course of 2 course floors and pavements, concrete lawn furniture, most uses where concrete is 1 to 2 inches thick.	4	1¾	2¼	¾

* These are trial mixes for average conditions. It is particularly important to use not more water per sack of cement than shown in the table. If sand is very wet, reduce amount of water 1 gallon per sack of cement. If sand is dry, increase amount of water ½ gallon per sack of cement. Change proportions of sand and gravel slightly if necessary to get the most workable mix.

(From Portland Cement Association)

Use Weights to Close Doors

Attach weights to barn and shed doors so that they will go shut by themselves, thus avoiding the necessity of stopping to set down a couple of pails or a sack of feed to close the door and then load up again.

Prevent Dangerous Falls

Cellar stairs are among the worst offenders in causing falls. If the lower step is painted white so it may be easily seen, and a hump placed in the hand rail to warn of the nearing bottom, many of these falls will be prevented.

Garden Hose Shows Level

An ordinary garden hose can be used to good advantage in finding the level for the foundation of a building or the level of a drainage pipe. Tie one end of the hose to the starting point and carry the other end to the next point. Then fill the hose with water which will give you the true level.

Thawing Frozen Pipes Inside Buildings

Bad fires are sometimes caused when open flames are employed to thaw frozen water or heating pipes inside of buildings.

If combustible materials are stored near the pipes, the materials may catch fire before it is realized that the flame is hot enough to be dangerous.

The safe way under these circumstances is to use hot water.

1. Wrap the frozen section of the pipe with cloths and pour hot water upon them until the ice gives way.
2. Harm to the floor may be avoided by catching the water in buckets or tubs, or by covering the floor with heavy rags or rugs which will absorb the water.

Never use an open flame to thaw frozen pipes inside of a building. Even though the flame may not cause a fire, its sudden local heat on metal may cause the pipe or pipe fittings to break and flood the premises with water.

National Safety Council Safety Instruction Card No. 131.

Farm Water Requirements

In planning the farm water supply, some idea of average daily water requirements is necessary. The table below gives average water requirements per unit per day.

Person (bath room)	25 gals.
Person (no bath room)	12 gals.
Cow	10 gals.
Horse	10 gals.
Hog	2 gals.
Sheep	1 gal.

As these figures are averages, a variation in the amounts of water consumed may be expected. Large cows and heavy milkers, for example, will require more water than small or dry cows. One hundred hens will drink about 4 gallons of water a day.

Keeping Washers Separated

Keep plain and lock washers on ordinary brass wire shower curtain clips, obtainable from hardware stores. These clips are inexpensive so that one can be used for each different size and type of washer. They are easily opened but hold tightly when closed, preventing spilling of the washers and mixing up of various sizes. They may be hung up on nails or stored in a box. Tags indicating the size may also be slipped onto the clips to facilitate finding the right washers.

True Hammer Face

If your hammer gives you trouble by glancing, it probably is because the face is worn round. Grind it true and flat on the grindstone, and you will find that nails will drive much easier, because the cause of glancing has been corrected.

Marking a Ladder for Easy Carrying

You know how difficult it is to carry a long ladder single-handed unless you hold it right at the balancing point. And it seems that no matter how often you pick the ladder up, you have to hunt that balancing point. Next time you have to find it, mark it by painting a line on each of the side rails.

Cleaning Oilstones and Files

If a glazed surface forms on a whetstone or oilstone, boil the stone in water. This will remove the hardened oil and most of the fine steel particles and accumulated dirt. The same treatment will often work on a file or rasp.

Grease Saw with Bacon Rind

If you have a saw that has a tendency to pinch, grease it lightly with a piece of bacon rind, and it will work much better.

Mousetrap Paper Clip

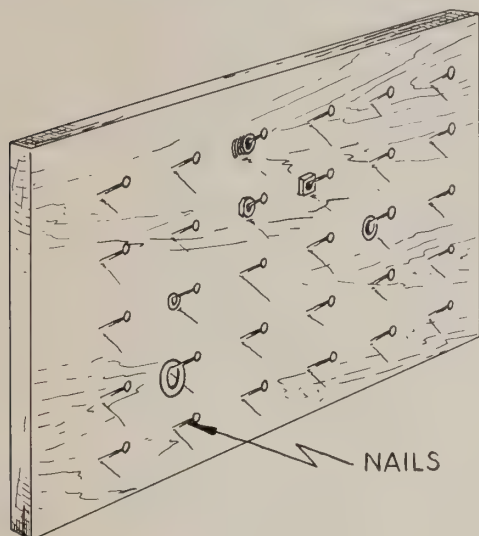
Do you find trouble keeping current account notes, receipts, delivery slips and other papers of only current importance? Take an ordinary mouse trap, remove the trigger and screw the wood base to the wall at some convenient place. Papers can be clipped under the bar as they collect. This will hold them ready for the time they are needed.

Encouraging Care of Tools

It is a good plan to paint an outline of the tools on the wall in the position they hang in order to encourage everyone who uses them to replace them properly.

Handy Rack

Here is a handy hanger or rack for nuts, washers and small gaskets. Take a board of the size you need, mark it off



into squares, and drive nails just far enough so they will hold. For small burrs and washers, use finishing nails. Nail or hang the board on your shop wall.

Nail Starter

Start small nails or tacks without smashing your fingers. Use a thin piece of wood with a slot in the end to hold the brad or tack when you are starting it. It works.

Sign Holder

An old auto wheel or rim and a 1/2" steel rod about 6 feet long are all the parts you need to make a very attractive sign holder for advertising farm products for sale.

The rod is threaded at one end for a nut. Place a nut on each side of the valve stem hole to hold the rod in place. Bend the rod about four feet from the wheel to make a horizontal plane on which you slide two rings. These rings hold the hooks on the top side of the first sign. Lower signs are fastened in a like manner.

Extra Closet

Space beneath the stairway can easily be utilized. Oversized drawers designed to hold the assortment that clutter the average closet can be built in.

The panels within the wainscoting can be hinged with concealed hinges and latches and pulled by a drop flush handle. The use of ball-bearing wheels as rollers will make the units slide in and out more easily.

Nail Pulling

To withdraw a nail which has been driven flush, pry up the board. Then drive the board down, missing the nail. This will leave the nail head above the surface.

Insert the claw of your hammer and pull up on the nail. When the handle goes to a vertical position, place a block of wood under the hammer head and continue drawing the nail out.

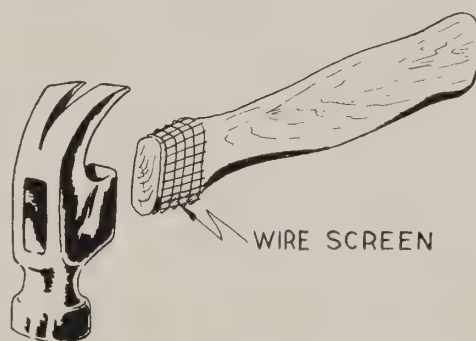
Drawer Slides

Stubborn drawers can be made to slide easily with thumb tacks.

Plane a shaving or two off the bottom edge of the sides of the drawer. Place smooth thumb tacks on the drawer separator so that the sides will ride on the tack heads. The tacks also prevent powdering or splintering of the bottom edge of the sides.

Secure Handle

Here is a way to fasten a hammer handle so it will not work loose. Taper the handle until it will just enter the socket, then wrap the tapered end tightly



with a layer of wire screening. When the handle is driven into the socket, the screening will bite into the wood and hold it securely. Other tools can be treated in the same way.

Pick Trick

Every once in a while a farmer has to use a pick in tight corners where there isn't room to take a healthy swing. Remove the pick head and slip one end into a pipe. Use the pipe as a vertical handle and go to work.

Homemade Decals

When papering the kitchen calls for new decals for cupboard doors, cut out designs from scraps of leftover wall-paper like that used in the room, and paste the decals in place. Then give them a coat of clear nail polish. They will be easy to clean.

Screen Scraper

When you scrape down peeling paint, try wrapping a piece of wire screen around a block of wood and using it like a sandpaper block. You can cover a large area without digging into the wood. On clapboard siding, you can scrape the face of one strip and the edge above in one stroke. A curved block will scrape curved surfaces.

Vise Substitute

Three pieces of wood will hold a piece of lumber for planing either the wide side or the edge. Nail a straight scrap and a triangular piece to your workbench, so the board being planed can't quite slip through. Wedge the board in place with a second triangle. Clamps should be thinner than the board being planed.

Nail Lubricant

Here's a way to facilitate driving nails into hard wood. Bore a hole in the end of your hammer handle and fill the hole with paraffin. Each nail can be lubricated quickly by first pushing it into the paraffin. This method eliminates the need of carrying another loose item along while you work.

Removing Putty

When replacing window panes, heat an iron and rub it over the old putty. It can be removed quickly in this way.

More Storage

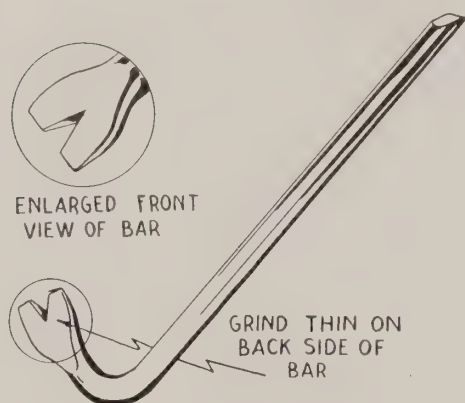
Screws, nuts, bolts, nails and similar small items can be stored conveniently under a shelf, rather than on top. Here's how to do it.

With round-headed screws, fasten the lids of glass jars under the shelf. Then, instead of twisting the lids on the jars, twist the jars on the lids. If a lid turns on the shelf, drive a small nail beside the screw and your troubles will be over.



Tool Saves Lumber

A small 10-inch wrecking bar should be a must in every farmer's kit of tools. Nearly every farmer depends on the old reliable 24-inch wrecking bar for saving



hammer handles in pulling nails, and for many other remodeling or wrecking operations. Few mechanics realize the value of the 10-inch bar, especially for starting nails so that they can be pulled by the larger bar. One mechanic recently salvaged about 400 feet of fairly good siding at a considerable saving in the lumber cost. The 10-inch bar is one of those inexpensive items you should have in your tool kit.

Rubber Door Pad

Here is a sketch showing how to fix a barn door to save broken windows.



The window is behind the door and when the door is left open for only a few minutes, the wind is likely to slam it back so hard that the window may be broken. Cut an 8-inch section off a tire casing and nail it as shown under the window. This will absorb the shock so the window won't break. It's a simple short cut that may save you some money and a lot of patience.

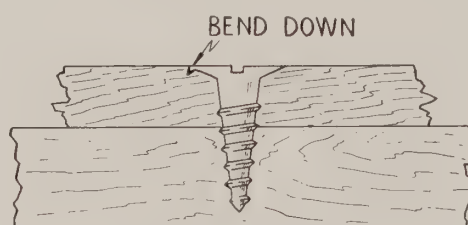
Knobby Job

When you paint or varnish drawer pulls, you can do a slick job just holding the screw in your fingers. But where do you go from there. If you put the knob down or try to attach it to the drawer, you mar the wet finish. But don't despair.

Attach the knobs to a cardboard box and you can do a perfect finishing job. Just screw the knobs into the top of the box and smear all you please. Remove when dry.

Wood Screw Lock

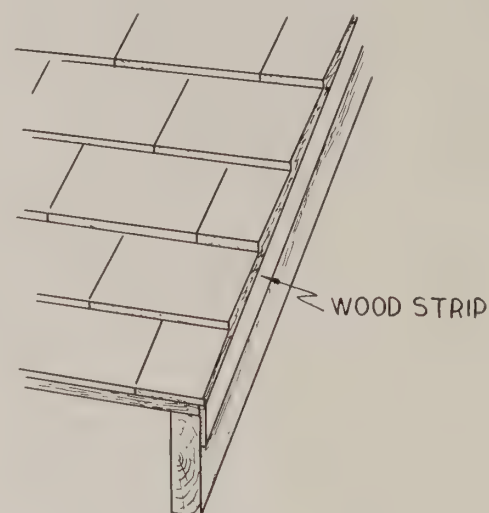
It is not uncommon for screws in wood to gradually work loose and come out. This is particularly true when two pieces of wood are joined together and under constant strain.



To lock such screws, a cold chisel can be used to bend down an edge of the head as indicated above. The bent-down portion will serve as a brake or lock on the screw. Bending the screw down at the point where it must move against the grain of the wood will result in a more solid lock.

Shingles Even

Asphalt strip shingles should overhang the rake edges of a roof $\frac{3}{8}$ inch.



Here is a simple way of keeping the shingle edges uniform:

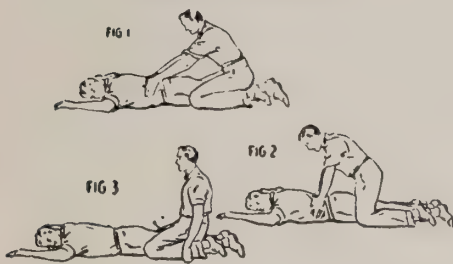
With small finishing nails, temporarily fasten a $\frac{3}{8}$ -inch-thick strip of wood to the ends of the roof deck sheathing so that the wood strip is flush with the top of the deck. Then place the shingles flush with the outer edge of the strip. The strip can easily be removed and moved to a new position as work progresses. The end result of your roofing job will make this little effort well worthwhile. Don't try to eye the shingles in line.

Time and Materials

Surface	Unit	Materials	Gals. — Lbs	Hours
Plaster Walls and Ceilings	100 sq. ft.	Varnish size	.29	.56
		Paint	.32	.79
		Glue size	.15	.34
		Calcimine	4.88	.73
Brick and Cement Walls	100 sq. ft.	Cement Paint	4.30	.46
		Whitewash	3.33	.50
		Oil paint	.63	.74
Wood Floors	100 sq. ft.	Wood filler	2.36	1.00
		Any standard floor finish	.30	.73
Interior Wood Paneling	100 sq. ft.	Any interior wood finish	.36	.96
Exterior Siding and Shingles	100 sq. ft.	Stain, varnish or paint	.27	.95
Gutters and Leaders	100 lin. ft.	Paint	1.36	4.00
Door and Frame, both sides	each	Any exterior or interior finish	.25	.96
Window and Trim, both sides	each	Any interior or exterior finish	.11	.76
Baseboard, 6 in. high	100 lin. ft.	Any interior finish	.33	1.23

SAFETY SECTION

Artificial Respiration



If a person is not breathing, give emergency First Aid by the prone pressure method at once, as follows:

1. Lay the patient on his stomach with one arm extended, the other bent at the elbow so that his face, turned outward, rests on his hand or forearm.
2. Kneel, straddling the patient's thighs. (Fig. 1.)
3. Place the palms of your hands on the small of his back, with little fingers just touching the lowest ribs.
4. With arms extended swing forward gradually, bringing weight of your body to bear upon patient. (Fig. 2. This compresses the lungs.) Take about two seconds for this operation.
5. Immediately swing back to remove the pressure. (Fig. 3. This allows the lungs to expand.)
6. After two seconds, swing forward again—and repeat the entire procedure 12 to 15 times a minute.
7. While artificial respiration is being continued, have someone loosen any tight clothing. Keep the patient warm and lying down. Do not give liquids by mouth until he is fully conscious.
8. If breathing again stops, renew artificial respiration. Continue for several hours, if necessary.

Check List for Fire Hazards

I. Heating System:

- | | | |
|---------------------------|--------------------------|--------------------------|
| A. Chimney | | |
| 1. Above roof | ☐ | ☐ |
| 2. In attic | ☐ | ☐ |
| 3. Flue openings | ☐ | ☐ |
| B. Stove and Furnace | ☐ | ☐ |
| 1. Casing or wall | ☐ | ☐ |
| 2. Clearance | ☐ | ☐ |
| 3. Base | ☐ | ☐ |
| C. Smokepipe | ☐ | ☐ |
| 1. Condition | ☐ | ☐ |
| 2. Support | ☐ | ☐ |
| 3. Clearance | ☐ | ☐ |

II. Shingle Roofs

III. Lightning Protection

- | | | |
|--|--------------------------|--------------------------|
| A. Ground connections .. | ☐ | ☐ |
| B. Conductor | ☐ | ☐ |
| C. Points (25 ft. apart or less) | ☐ | ☐ |

IV. Lighting System

- | | | |
|--------------------------|--------------------------|--------------------------|
| A. Electric wiring | ☐ | ☐ |
| 1. Fuses | ☐ | ☐ |
| 2. Insulation | ☐ | ☐ |
| 3. Support | ☐ | ☐ |
| B. Lamps or Lanterns ... | ☐ | ☐ |

V. Spontaneous Ignition ...

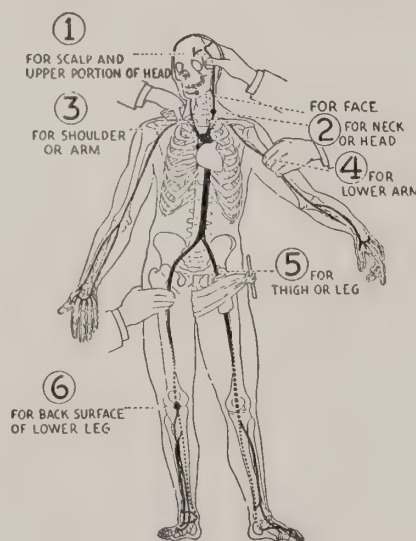
VI. Other Hazards

- | | | |
|---|--------------------------|--------------------------|
| A. Gasoline and Kerosene storage | ☐ | ☐ |
| 1. Starting fires with kerosene | ☐ | ☐ |
| 2. Gas engines | ☐ | ☐ |
| B. Electrical household appliances | ☐ | ☐ |
| C. Smoking (No Smoking sign in barns) | ☐ | ☐ |

VII. Fire Protection

- | | | |
|----------------------------|--------------------------|--------------------------|
| A. Ladder | ☐ | ☐ |
| B. Fire Extinguishers | ☐ | ☐ |
| C. Rural Fire Dept. | ☐ | ☐ |

Applying Pressure to Stop Bleeding



Tourniquets are useful in two locations: At point No. 4 about the middle of the upper arm and at point No. 5 in the groin. These two points should take care of bleeding at any place below them. Pressure should be applied tight enough to stop the blood from spurting and should be released every 15 minutes; if bleeding starts again the bandage should be tightened.

You should feel the pulse in every case, otherwise you are not pressing the artery. Pressure should be sufficient to stop this pulsation.

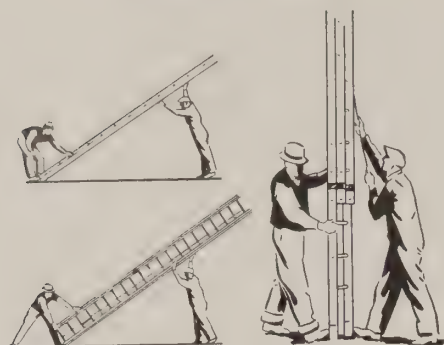
Safety of the Small Child

1. Select toys and playthings with the safety of children always in mind.
2. Do not allow children to play with metal toys which have sharp points or edges.
3. Serious falls may be caused by toys left on steps, stairways and walks.
4. Small children have a way of putting anything into their mouths and are easily choked.
5. Avoid throwing razor blades, bottles and medicines into waste baskets; children may find them.
6. Keep matches where children cannot get them; put the sticks of "dead" matches, cigar and cigaret butts into closed containers.
7. Do not permit small children to play with tools; or to play where tools may fall on them.
8. Protect children from open fires, from kitchen stoves and all cooking vessels, and from kitchen utensils and other objects which might fall on them or be pulled over on them.

Safety in the Kitchen

1. Have the stove fitted with safety cocks, so that gas petcocks cannot be turned without releasing a clip.
2. Keep the handles of cooking pans and pots turned so that children cannot grasp them.
3. Place matches securely beyond a child's reach, and teach him to respect and avoid fire.
4. Place sharp knives well back on the table; do not carry knives about unnecessarily; keep them in drawers.
5. Open the oven door and leave it open for several minutes before turning on gas and applying a match.
6. Cover the hand with a cloth before opening a steaming vessel or roaster; lift the far side of the cover first.
7. Beware of hot grease spattering on hands or arms; apply first aid, or summon a doctor for any serious burn or cut.
8. Take time and care in using grinders, beaters, slicers and all other power-driven appliances; be sure the extension cord is of approved make and in good condition.
9. Open tin cans with a proper appliance; dispose of bottles and refuse where children cannot find them.

Setting Up a Ladder



1. Select a ladder with suitable safety feet; otherwise, block or tie the base, or have someone hold it.
2. Be sure rungs and side rails are in sound condition.
3. Place ladder feet parallel with wall or other solid backing. It is unsafe to rest a ladder against loose boxes, round objects, or other insecure backing, unless it is tied so that it cannot fall.
4. The best angle for a ladder is about 75 degrees with the horizontal. Have the base about $\frac{1}{4}$ of the ladder length out from the bottom of the object it leans against. In other words, place the base of a 12-foot ladder 3 feet from the object it leans against.
5. If the ladder is placed before a doorway, lock the door or have someone guard it. Protect the ladder base from traffic, if necessary.
6. When using a stepladder, make sure it is fully extended before you climb.
7. If an extension ladder is used, follow the sketches and instructions below to avoid accidents when raising and extending it.
 - (a) Wait until the ladder is raised to a vertical position, then extend it. Be sure to watch where you put your fingers, lest they be crushed.
 - (b) To lower the ladder, simply reverse the operation, but first raise the upper section just enough to release the hook so it can be lowered.

Climbing Ladders

1. If your shoes are muddy or otherwise slippery, clean them before you climb.
2. Always face the ladder and hold on with both hands, whether climbing up or down.
3. Carry tools in suitable pockets; or have tools and all other objects hoisted with rope and bucket.

Working From Ladders

1. Work facing the ladder and hold on with one hand.
2. Use a safety belt if the character of the work requires it.
3. It is dangerous to reach out too far from a ladder in any direction; move the ladder as the work may require.
4. Avoid the use of two ladders spliced together; get one long enough to reach the job.
5. It is unsafe to use a ladder as a horizontal member of a scaffold.
6. When using ladders on roofs or other high places, lash them securely. Do not work in a high wind.

Brush Painting From Ladders

Brush painters should take every precaution in climbing and working from ladders. Important safety suggestions include the following:

1. Have plenty of clearance on each side, also in front of and behind the ladder.
2. Do not lean a ladder against window sash; fasten a board to the ladder top as a bearing on each side of the window frame.
3. Hang the paint bucket from a ladder rung by a suitable hook; hold to the ladder with one hand while painting.
4. It is dangerous to reach out too far in any direction from a ladder; climb down and move the ladder, as may be necessary.

In Case of Fire

When a fire is discovered in the daytime, it is usually small. A rug or a heavy garment may smother it; a fire extinguisher may easily put it out.

But if the fire, when discovered, is already large, warn other persons in the house, and summon assistance immediately.

1. If fire-fighting service is available, notify the fire department. If you telephone, explain clearly that you want to report a fire; give the correct location.
2. If at night you smell smoke, do not open your closed door at once. Flame and smoke rushing in about you might be fatal. Feel of the door first; if it is not warm, open it with caution.
3. If there is dense smoke but no flame, get on your hands and knees (the air is purer at the floor level) and crawl to safety. Cover your mouth and nose with a damp cloth, if possible.

To Avoid Injury When Lifting



1. You may be as strong as an ox but be careful what you lift. Even if your back muscles were made of steel there would be a limit to the strain they would stand.
2. Size up the load before you lift it. Get help if necessary.
3. Lift with your legs and not your back.

Home Fire Precautions

Fire threatens disaster to every home. Here are some things to do to prevent home fires.

1. Do not smoke in bed. Put matches, cigar and cigaret butts in metal containers.
2. Completely enclose wood and coal fireplaces with wire screen.
3. Be sure floor lamps and extension cords are in good repair.
4. Disconnect electric appliances as soon as through using them.
5. Burn oily rags. Set oily mops in the open air. Never store easily flammable materials in closets.
6. Never start a fire with gasoline or kerosene.
7. If any garment cleaning is done at home, use nothing but non-flammable cleaner; never use gasoline or naphtha.
8. If gasoline or kerosene is kept on hand, keep only small quantities, in safety cans, OUTSIDE the house.
9. Clean chimneys and flues annually. Protect woodwork and other flammable parts near furnace or stove with insulation.
10. Place ashes in metal containers; dump ashes where they cannot set fire to anything.

Home Remedy

Although we are always wary of home medical cures, here is one that may tide you over until the busy doctor can get there. A painful earache can be relieved no end by roasting a raisin and binding it as hot as you can stand it in the ear.

Farm Work Accidents

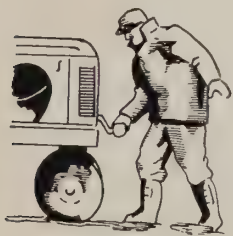
Accident records now show that your chances of being killed accidentally while doing farm work are more than three times as great as working in a manufacturing plant. If farmers would observe safety rules as strictly as factory workers do, farm work accidents would drop rapidly.

Falls account for the largest portion of farm work mishaps. Next in order of importance come accidents with machinery, livestock, handling objects, hand tools, stepping on or striking objects, and falling or flying objects.



Weed out the hazards that lead to falls. High door sills, abrupt changes in floor levels, weak boards, protruding cleats or other tripping hazards should be removed. All steps or ladders should be repaired or discarded. When you have to climb, see that you have sure footing and something to grab in an emergency.

Do some house cleaning and get things in order around work centers. Don't work in the dark. See that you are secure when riding farm equipment and prohibit extra riders. Take time to walk; don't run. Clear slippery sidewalks of ice and snow or sprinkle them with sand or ashes.



The cardinal rules to observe while working with farm machinery are: 1. Always stop equipment before oiling, adjusting, servicing, or unclogging. 2. Keep all guards and shields in place. 3. Stay on tractor seat while in motion; never dismount until it has stopped. 4. Always hitch the tractor drawbar, avoid ditches, and don't operate on steep hillsides. 5. Avoid excessive tractor speed, don't operate in the dark, use front and rear lighting on the highway at night. 6. Watch out for fire—never operate tractor in closed buildings, avoid leaky fuel lines and don't refuel while the motor is running. Always store fuels a safe distance from buildings and carry a fire extinguisher on the tractor, especially in harvest time. 7. Never permit

children to operate tractors or other farm machinery.



approach an animal without warning him, and avoid approaching from the rear.

Always be on guard when driving or riding horses. Be especially careful with mares, cows and sows when they have their young because they will act vicious to protect them. See that cattle are held securely when dehorning, trimming feet, and when ringing bulls or doing similar service work.

Always keep bulls and boars in a safe pen so they can be fed and watered without direct contact with them. Keep boars' tusks trimmed and bulls ringed. When necessary to lead a bull, always use a staff.

Be Prepared

A recent U. S. Government booklet, "Survival Under Atomic Attack" gives six secrets of survival which you might want to remember.

1. Try to get shielded. Go to the basement, or if caught outside, seek shelter alongside a building or jump in a ditch.

2. Drop flat on ground or floor, to keep from being tossed about.

3. Bury your face in your arms. This will protect your face from flash burns and protect your eyes.

4. Don't rush outside right after a bombing. Wait to give lingering radiation some chance to die down.

5. Don't take chances with food or water in open containers. When there is reason to believe they may be contaminated or radioactive, stick to canned and bottled things if possible.

6. Don't start rumors. There is no reason to become alarmed over the possibility of an attack but there is reason to be prepared.

Safe Butcher

At butchering time, when you slaughter those hogs, be sure to select a place that is free of ice or snow. Check your hoists to be certain they will sustain the weight that is to be placed on them. Avoid weak ropes, worn pulleys and rotten tree limbs. When you go inside to cut the meat, be sure to pick up all meat trimmings from the floor. They are as slippery as banana peels. Keep your knives sharp and always cut away from your body. If the knife should start to fall, let it fall; DO NOT GRAB IT!

Brooder House Burns

Each year we see too many headlines telling of brooder house fires. It seems that something goes wrong with the brooder stove and the building with the chicks goes up in fire.

If a gas, oil or electric stove is used, be sure to check the thermostat for proper operation. Gas and oil brooders should also be checked for leaks. If there is any question about the wiring for your electric brooder be sure to contact your electric company. Ask them about the size of wire being used. Be sure to avoid an overload and always use weather proof wire on the outside of the house.

Silo Safety

Don't leave a ring of silage around the silo as you feed down through the center. It may break loose and bury you. Or a frozen chunk may drop on your head.

First Aid

You might find it handy and useful to paste a list of first-aid treatments inside your medicine cabinet or first-aid kit. In case of emergency, you can turn to the cabinet where both the necessary information and supplies for administering are at hand.

Safety Tip

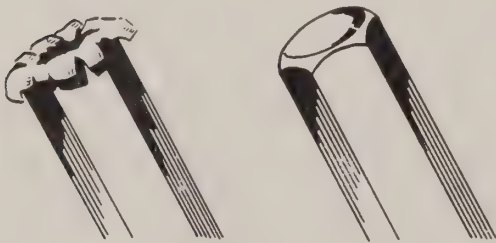
A safer way to use an extension cord in the basement, attic, or garage is to run the cord through rubber fruit jar rings. Loop the rings over nails driven into the rafters and you will have a safe wiring setup.

Hand Tools

It has often been said that hand tools don't cause accidents; it's the people who misuse or misplace them. No truer statement has ever been made. Following is a list of helpful do's and don'ts which cover most of the hand tools used around the home or farm.

Dress Shock Tools

Always dress struck ends when they begin to crack and spread to eliminate hazards of splintering steel and diverted blows. Never allow tools to reach the

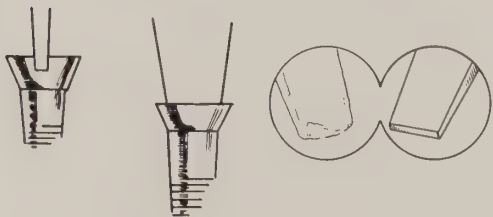


stage of burring or mushrooming shown above.

A tool will withstand more hammering with less danger of chipping when dressed with a slight radius ($3/16''$) on the edge of the head. A radius is better than a straight bevel or chamfer.

Screwdrivers

Grind screw driver blade so that tip has square edge and parallel surface to avoid slipping. Select the screw driver of proper size to fit the milled slot. A blade too thick or too thin may slip.



The misuse of a screw driver as a pry or a chisel is hazardous. When work is held in hand injury will result if the tool slips. Make a hole with a drill or nail to start each screw.

Hack Saws

Use sharp blades with coarse teeth for heavy material and fine teeth for light material (about 18 teeth per inch for general work). Point teeth forward and

use just enough tension to hold the blade straight and prevent twisting. Anchor work solidly, grip handle with right hand and use left hand to guide saw. To start the cut, score the work on the up-stroke, then use slow steady strokes with enough pressure on the forward stroke to make the teeth cut. Lift slightly on the back stroke.



Cold Chisels

Keep tools clean and free from grease. Select the right chisel for the work being done and check its condition. Wear goggles. Holding a cold chisel between thumb and forefinger with palm up is recommended whenever possible. Keep bevelled cutting edge flat against work. Pay strict attention to what you are doing and keep your eye on the cutting edge of the tool.



Wood Saws

Keep saw sharp, clean, and set teeth properly. Use crosscut saw for cutting across the grain and a rip saw for cutting with the grain. Start a cut with one or two long pulls upward, using thumb as guide. Then remove hand from danger zone and proceed with long forward cutting strokes. Watch your balance, keep the saw blade in direct line with the cut at 45 to 60 degree angle. Hang saw up when not in use.



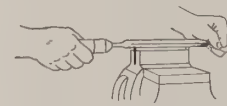
Wrenches

Use wrenches of the right type that fit snugly. Pull in direction the jaws joint. If the wrench must be pushed, use heel of the palm against the end of the handle to protect knuckles if it slips. Never use a piece of pipe on the handle to get more leverage, a shim to make a large wrench fit, or pliers as a substitute for a wrench. Don't hammer on a wrench.



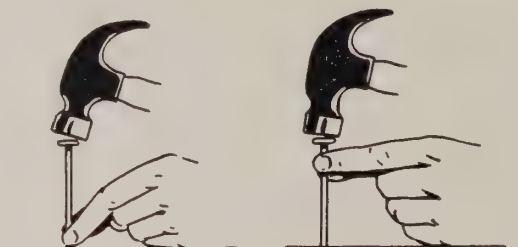
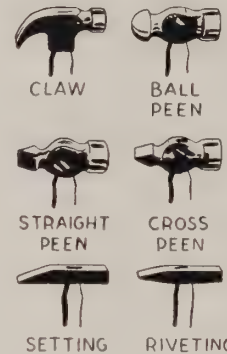
Files

Keep files clean and fit them with good handles. A file should be pushed forward with just enough pressure to cut and should be lifted on the return stroke. Use long, steady strokes when filing. Files are made for filing and they are too brittle to be used for other purposes such as prying, punching or hammering.



Hammers

Examine hammer carefully. Make sure that the head is securely attached. Keep tool and hands free from grease. Always wear goggles. Never use a hammer if it is not in good condition. Replace broken handles and keep the striking face dressed or throw the hammer away. There is a proper type hammer for every hammering job—always select the right one. Never use a makeshift in place of a hammer.



In working with wood, to start a nail use light taps. It is wrong to have your thumb and finger near the point of the nail. If the nail slips you will have a smashed thumb and finger. Keep the thumb and finger near the head of the nail. Then if the nail slips, your thumb and finger will knock out of the way.

When working with metal, support your work on something hard and solid. Grasp the handle firm near the end, hold chisel with steady but relaxed grip and strike squarely. When riveting with a ball peen, strike down with the ball peen, then rivet over with ball peen or face of the hammer. Use a sledgehammer to support irregular work.



HOMEMAKERS' SECTION

Work Comfortably

The height of the kitchen sink and work space has a great deal to do with the fatigue of the homemaker. Experts say that 32 or 33 inches from the floor to the bottom of the sink is the right height. A wooden rack made of slats to fit the bottom of the sink can be made for use at dishwashing time where a higher surface is needed.

Windows Stick!

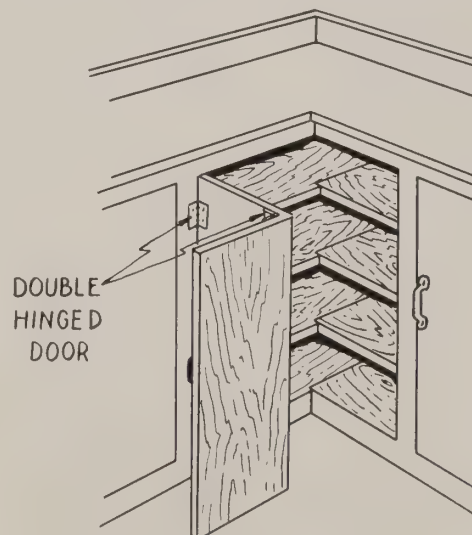
To pry loose a window that has been newly painted, rest a small block of wood on the middle ledge (as far as possible from the lock) and give the block a few solid raps with a hammer. Move to other end of ledge and hit again. This jarring usually breaks the paint seal and not the window.

Button Tip

For that bottom button that will tear off a button-down-the-front dress: sew button on an inch-long piece of elastic. Sew elastic flat to the dress with the button in its proper place. Gives enough stretch to prevent tearing; elastic doesn't show when dress is buttoned.

Corner Cupboards

A double-hinged door will make right-angle corner cupboards more usable. The picture above shows that the corner post to which doors are ordinarily hinged is eliminated. This leaves the entire corner free and easily reached. The double-hinged door opens fully, making it possible to use conveniently the entire corner shelf space. Structural support is provided by horizontal braces under the shelves and top.



Two from One

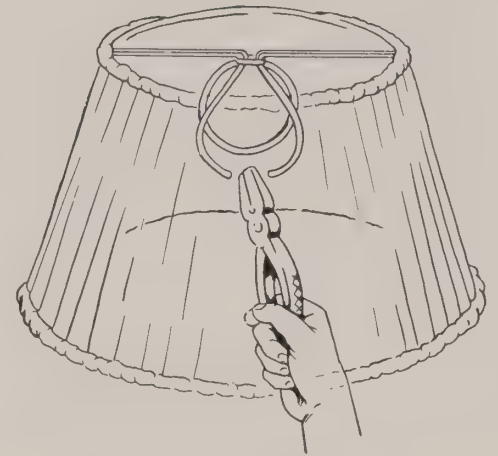
An old paneled door can be cut in half, Dutch door fashion, in most any room in your house. You can keep a weather eye on the children playing in the next room and not have them underfoot where you may be working. Such treatment gives a "new look" to any room.

Clean Silver

Easiest way to clean your everyday silver is to cover the bottom of your enameled dishpan with a piece of aluminum foil. Lay the silver on top of the foil and pour boiling water on to cover each piece. Add a teaspoon of salt and one of soda for each quart of water. Move the silver about so that each piece eventually touches the aluminum foil. In about two minutes all the tarnish will disappear and you may rinse and dry the silver. This is not recommended for silver with a French gray finish.

Left-Over Floss

How many times have you had to hunt for a certain shade of embroidery floss? If you do a lot of embroidery you accumulate a lot of left-over skeins. These can be kept from tangling by placing the strands straight between the pages of a book. Lay strands of one color across one page, strands of another color across another page, and so on. Leave just enough of the ends to peek out at the top.



Shade Anchor

Many lamp shades are held in place by two wire rings which snap down over the light bulb. When such lamp shades are placed on large-sized bulbs, they will slip or pop off. A remedy for this is to cut, with ordinary wire cutters, both rings at their lowest point. A four-prong wire claw will thus be formed which will hold firmly to any size lamp bulb.

Speeds Dishwashing

A button sewed to one corner of the dishcloth sounds ridiculous. But it is really wonderful for scraping off those stubborn particles of food that have dried on the plates or stuck to the pans.

Wallpaper Hint

Before repapering a room, apply a thin coat of white shellac to any grease spot that may be on the wall. Then no grease will penetrate the new wallpaper.

More Buttons

Plastic buttons that break between the holes used for sewing on the buttons, can sometimes be salvaged for further service by heating a needle and piercing new holes for fastening. This is particularly true if the buttons are an unusual color that is difficult to match.

For Small Fry

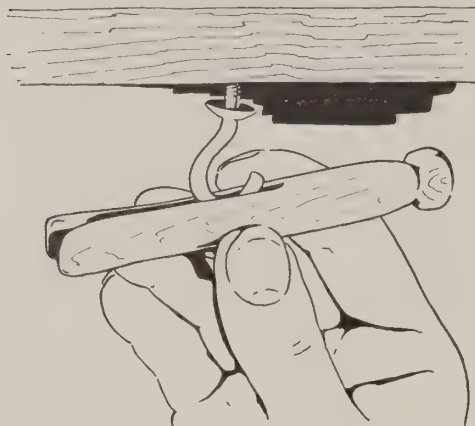
Take along a shopping bag when going to the movies with the children. In it can go all the mittens, hats, scarves and what have you, and there is no danger of losing anything. It also ends the juggling of things on your lap.

Potato Use

To remove onion odor from the hands, "soap" them good with an unpeeled raw potato in cold running water.

Handy Tool

A clothespin is a handy gadget to use when attaching cup hooks to cupboard or closet shelves. You merely place the slot of the clothespin over the hook and



use it as a handle to turn the hook. This method is guaranteed to cut down on blisters and broken finger nails.

Quick Fastener

Screen door hooks, fastened to the ends of an indoor clothes line, make a quick method of putting up and taking down the line. Put screw eyes into opposite walls or supports. No more need to struggle with knots.

Washday Wisdom

To save energy, do two or three small washings a week instead of one large one. At the end of the week, towels and knitted underwear which require no ironing may be washed and put away, leaving less to do on Monday.

Long soaking of clothes is undesirable — it loosens dirt but passes it throughout the fabric. An hour is sufficient. Cover things that must stand overnight with cold water rather than hot. Nursery wash in need of soaking must be kept to itself; so should things from a sickroom.

To soften hard water, use borax, ammonia, washing soda, trisodium-phosphate or commercial preparations.

When using bluing in hard water add one cup of skimmed milk before putting in the bluing.

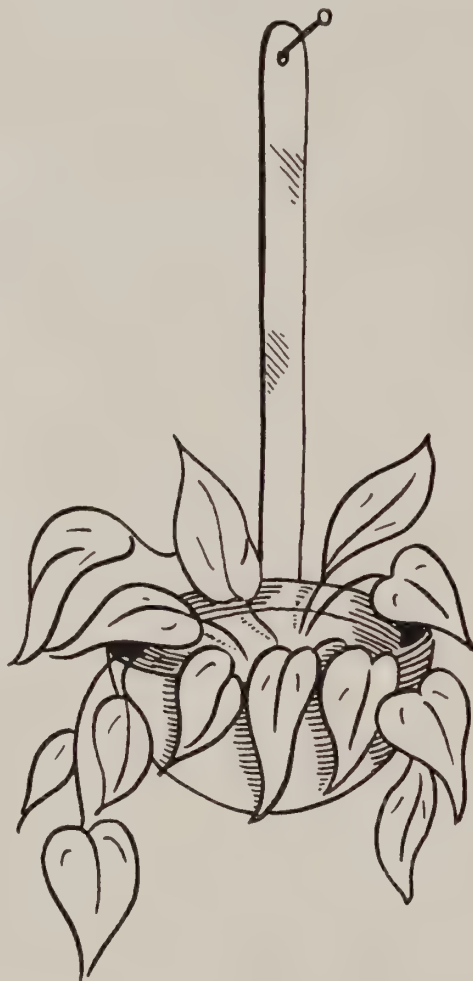
To whiten clothes, add one teaspoon of powdered borax to rinse water; or put one teaspoon of peroxide in soaking water; or if boiling, add a slice of lemon, rind and all, along with the soap.

To keep white clothes white, wash in hottest water possible, with good rich suds. Rinse 2 or 3 times to remove all soap, and have rinse water as hot as the washing water. Change washwater when dirty; washing clothes in dirty water makes them grimy in appearance.

Plant Holder

Do you have an old soup ladle or dipper that is no longer fit for kitchen use? Take a look! If you find one you have the makings for an attractive plant holder.

Scour and wash it thoroughly. If it needs to be painted give the handle and underside of the bowl a coat or two of paint in the color of your choice. Add a simple design if you like in another color. If the surface is not unsightly touch up the handle with narrow diag-



onal lines in groups of three using red or rose nail polish.

If the end of the handle has a hole that will fit on a nail, that's fine. If not, straighten the end with a hammer and ask for help if you can't drive a nail through it. Fill the bowl of the ladle with sand and soil. Plant clipping of philodendron or other vines in it. Don't forget to water it frequently as it will have much less soil than it would growing in a flower pot.

If you like to make something for nothing, this is it.

Book Holder

Clamp a trouser hanger over the opened-up cook book or magazine, and hang at eye level. This will make it much simpler to follow the recipe.

Soapless Shampoo

Some types of ink can be removed from washable material by applying glycerine, rubbing the stain lightly between fingers, rinsing in clear water, and repeating the treatment until the stain is gone. The soapless shampoo may also be used in treating fresh ink stains.

Stops Spatters

Grease spatters are sometimes a problem when frying meat that should not be covered, such as fish. A good way to prevent the spatters, and still allow the steam to escape, is to turn a colander upside down over the meat.

Remove Decals

Scotch tape can be used to remove water decals without marring the furniture. Stick a strip of tape on the decal and then gently lift up. The decal comes off but the varnish stays.

Cuts Eye Strain

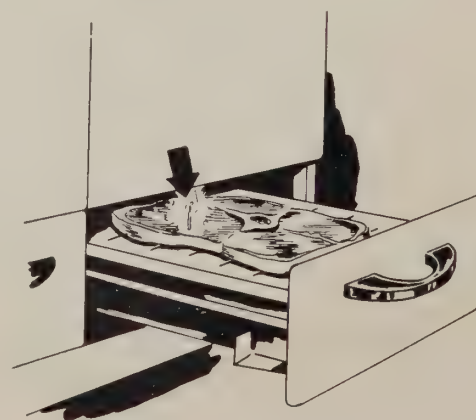
If you do a lot of knitting it is a good idea to have two sets of needles, light colored for dark yarn and dark needles for light yarn. This will avoid eyestrain especially if you knit at night.

Laying Linoleum

A roller skate, slipped under each corner of a range or refrigerator will make it much easier to lay linoleum. The wheels turn as you slide the linoleum under. Then you can roll the appliance out into the room while you put cement under that part of the linoleum.

No Burns

To light a broiler, stick a lighted match in the meat, turn on the gas and shove the broiler into the stove. Remove the match when the broiler is lighted. This method cuts down on arm and hand burns and keeps you safe from small stove explosions.



Household Tricks

Make checkers for your youngsters from quarter-inch rounds sawed from an old broom handle. Paint half black, half white. Use lead-free paint.

* * *

Put a bicycle handle-bar grip on your mop handle—makes it easier to hold with wet hands.

* * *

Why hem baby's diapers? Use a pair of pinking shears and they won't need to be hemmed. They are less bulky and dry more quickly.

* * *

When removing a stain with steaming or boiling water, put a pair of embroidery hoops around the spot. This avoids burning the hands.

* * *

If a dripping faucet annoys you before it can be fixed, tie a string around the bottom of the outlet. The water will run down the string and not drip.

* * *

Try to form the habit of using all burners of the electric or gas range instead of limiting yourself to one or two. It keeps the range in better condition if all have uniform wear.

* * *

Minor soil on wallpaper can be removed by dipping a clean cloth into dry powdered borax and rubbing the soiled spots.

* * *

Make ironing easier by piling cotton napkins and handkerchiefs six-thick and rolling them tightly in a heavy bath towel. They'll be just right for ironing in about an hour.

* * *

Hunters or campers can carry fresh eggs easily by breaking them into a vacuum bottle.

* * *

Put small pieces of soap in the clothes basket where you will be sure to find them on washday. You won't waste them.

* * *

Before making buttonholes in thin material, rub a bit of library paste on the wrong side of the material and allow to dry. It gives body.

* * *

Thread won't tangle when using a double strand if you knot each strand separately.

Makes Ironing Easier

Beeswax or paraffin, of course, makes the iron glide more smoothly. But too much is just as annoying as too little, and the wax should be handy to the ironing board so that the minute quan-

tity needed can be applied easily. Here is the way to always have the wax handy and apply just the right amount to the iron. In one end of the ironing board bore a few holes about one-half inch deep. Fill the holes with beeswax or paraffin and cover them with two thicknesses of muslin. Rubbing the hot iron over the muslin will bring up just enough wax to make the iron work smoothly.

Roll Lines Without Kinks

To coil clothesline, wire or rubber hose so that it will not kink or twist, try rolling towards you instead of from you.

Weights and Measures

Lard—2 cups make 1 pound
 Butter—2 cups make 1 pound
 Flour (Pastry or Bread)—4 cups make 1 pound
 Flour (Whole Wheat)—3-7/8 cups make 1 pound.
 Flour (Graham)—4½ cups make 1 pound
 Flour (Rye)—4⅛ cups make 1 pound
 Corn Meal—2-2/3 cups make 1 pound
 Rolled Oats—4¾ cups make 1 pound
 Oatmeal—2-2/3 cups make 1 pound
 Coffee—4-1/3 cups make 1 pound
 Sugar (Granulated)—2 cups make 1 pound
 Sugar (Powdered)—2-2/3 cups make 1 pound
 Sugar (Confectioner's) — 3½ cups make 1 pound
 Sugar (Brown)—2-2/3 cups make 1 pound
 Meat (Chopped)—2 cups make 1 pound
 Rice—1-7/8 cups make 1 pound
 Raisins (Packed)—2 cups make 1 pound
 Currants—2¼ cups make 1 pound
 Bread Crumbs (Stale)—2 cups make 1 pound
 Eggs (Large)—9 make 1 pound
 Butter—2 tablespoonfuls make 1 ounce
 Flour—4 tablespoonfuls make 1 ounce
 Baking Powder—6 tablespoonfuls make 1 ounce
 Salt—1 tablespoonful makes 1 ounce
 3 teaspoonfuls make 1 tablespoonful
 16 tablespoonfuls dry ingredients make 1 cup
 4 teaspoonfuls (liquid) make 1 tablespoonful
 4 tablespoonfuls make 1 wineglass (or ½ gill)
 2 wineglasses make 1 gill.
 2 gills make 1 coffee cupful, or 16 tablespoonfuls
 2 coffee cupfuls make 1 pint
 2 pints make 1 quart

4 quarts make 1 gallon
 2 tablespoonfuls (liquid) make 1 ounce
 16 ounces make 1 pound—or 1 pint of liquid
 1 pint finely chopped meat, packed solidly, makes 1 pound
 4 coffee cupfuls sifted flour make 1 pound
 1 quart unsifted flour makes 1 pound
 1 pint sugar (white granulated) makes 1 pound
 1 tablespoonful soft butter, well rounded, makes 1 ounce
 An ordinary tumblerful equals 1 coffee cupful or ½ pint.
 About 25 drops thin liquid makes 1 common teaspoonful.

Short Cuts for Busy Homemakers

In Extension Circular 1187 — "Shortening the Work Hours"—the University of Nebraska Agricultural College Extension Service gives a number of ideas for more efficient house-keeping. Among them are the following:

• When measuring a half cup of fat put a half cup of cold water in the cup first, then add fat until water reaches one cup mark.

When cutting marshmallows, butter the scissors used. It keeps the marshmallows from sticking together or sticking to the scissors.

Cleaning can be saved by basting the top of the trouser cuff on men's work and chore trousers. Then they will not catch and fill with dirt and chaff which is so often brought into the house.

For cleaning the top of a kitchen stove a blackboard eraser is useful. It is more satisfactory than a cloth and keeps the hands clean.

Use a paper plate underneath a paint can when painting. It provides a place for the brush and prevents paint from dripping on the floor.

An alarm clock placed in the kitchen window will call you from the garden or flower beds at just the right time. This will save many unnecessary steps to the house to see what time it is.

When cutting soap for washing clothes, try cutting it on a cabbage cutter. Flakes are uniform and as thin as tissue. Then pour boiling water over them and they will melt instantly.

If you will place a pin across the button and sew over it when you sew buttons on heavy cloth, a shank will be formed and the button will button easier and stay on longer.

Mashed potatoes may be kept hot while waiting by placing the kettle in a pan of boiling water or by putting the potatoes in the upper part of a double boiler.

Cover the fruit juice which has oozed from a pie in the oven with salt to prevent smoke.

Rinse with hot water the cup in which you are to measure lard or butter.

To clean paint from clothing, take equal parts of ammonia and turpentine, saturate the spot two or three times, then wash out in soap suds. This will remove the paint, no matter how dry or hard.

A bag of flannel large enough to fit over the broom is a handy article to clean ceilings and high walls. It can be removed and washed easily.

Removing Stains

Here are some effective methods of removing more common stains from clothing, hats, etc.

Grass Stain: Use hot water and soap and remove the stain by thorough rubbing. Or, apply grain or wood alcohol by sponging. This method is good for use on fabrics which might be injured by laundering.

Grease Stain: Scrape or wipe off as much of the grease as possible, then launder with a soap containing naphtha or kerosene. Carbon-tetrachloride, gasoline or naphtha, may be used. Carbon-tetrachloride is the safest as it is not inflammable. All others should be used in a cool shady place out of doors or before an open window away from all flames in the house. Place a pad of clean cloth or white blotter beneath the stain and change it as soon as it becomes soiled. Sponge the stain with a clean cloth, moistened with the solvent. To prevent the solvent and grease from spreading, it is best to use small amounts of the solvent at a time and work from the outside of the spot toward the center. After sponging, rub with a clean cloth until the spot is thoroughly dry.

Ice Cream Stain: Use ordinary laundering methods or sponge with lukewarm water and then use the solvents mentioned for grease.

Ink Stain: Soap and water will remove some types of school inks when rubbed thoroughly. If this does not prove satisfactory soak the stains in milk, a day or two if necessary. These methods are safe for use on all washable fabrics. If they fail you might try

moistening the stain with lemon juice and expose it to the sun.

Fruit and Wine Stains: Quickly cover the spot with salt if fruit juice or wine is spilled on the table cloth. The salt lessens the stain and boiling water poured through the stains will usually remove them entirely. If the boiling water fails, try a weak solution of oxalic acid.

Coffee and Tea Stains: Pour boiling water through the stains until they disappear.

Iron Rust Stains: Cover rust spots with salt wet with lemon juice and lay out in the sun.

Other suggested stain removers for rust spots are:

Salts of lemon and sunshine as described above.

Ripe tomato may remove the stains.

Soaking in milk may also prove effective.

If the material is white linen or cotton, try chlorinated soda.

Kerosene Spots: Spots left by kerosene spilled on books, rugs or furniture will sometimes disappear if the article is left in the bright sunlight all day. If this fails, hold spotted article as close to a hot fire as you can comfortably hold your hand.

Paint Stains: Turpentine will remove paint spots from fabrics, glass or iron.

Blood Stains: Wash with clear, cold water. If this fails, wet with kerosene and wash in warm suds.

Mildew: Here are several suggestions for removing mildew:

Try lemon, salt and sun as suggested for iron rust.

Use diluted oxalic acid.

Rub the stains with molasses and then thoroughly wash the fabric.

If the material is white, try boiling it in buttermilk.

Cleaning Silver

If your silverware is not deeply tarnished and you want to avoid the unpleasant task of polishing it in the usual way, allow it to stand one hour in potato water. When it is removed and dried it shines like new.

Removing Glassware Stains

Glass dishes which have been badly stained by letting hard water stand in them may be cleaned by this method. Fill with sour milk and let stand for twenty-four hours. Then wash out the dish in the regular way.

Cleaning and Polishing Metals

Here are some helpful ideas for cleaning and polishing:

Silver: The easiest way to keep silver polished is to use it. If silver must be stored, it is best to keep it in a cool, dry place, either in dark-colored outing flannel cases, in a drawer lined with black paper or in a glass jar with camphor gum. The gum must not touch the silver.

Tarnished silver may be polished with a paste made of 3 parts of the finest whiting to 1 part of alcohol or ammonia. Apply this with a soft cloth, allow it to dry, then polish with another soft cloth. Wash in suds, rinse and dry.

Copper, Brass and Pewter: These are beautiful with the soft, dull finish that comes with age; but sometimes a bright finish is desired. To get it, make a cream of fine whiting and alcohol, apply this with a soft cloth and allow it to dry. Wash and rinse. Dry. Vinegar or salt may be used on brass and copper to give a bright metallic finish. It should be washed off thoroughly.

A dull finish may be given to metal by using a paste of rotten-stone and linseed oil. After applying it with a soft cloth, wash, rinse and dry.

(New York State College)

Removing Grease Spots From Rugs

If allowed to remain for any length of time, grease spots are usually difficult to remove from rugs and carpets. Remove such spots promptly, using a grease solvent, such as carbon tetrachloride. Use the solvent on an inconspicuous part of the rug before attempting to remove the spot so that you can be sure it does not affect the color. Then work from the outside of the stain in toward the center, and repeat as necessary.

Candle wax spots can often be removed by first scraping off as much wax as possible with a dull knife, being careful not to injure the yarns. Then sponge with a grease solvent. If the candle was colored and a stain remains, try sponging lightly with a liquid made up of two parts of water and one part of denatured alcohol. As a precaution against fading, test first on an inconspicuous part of the rug.

Grease Remover

A cloth dampened with vinegar will do wonders in wiping down a stove top which has become splashed with dancing grease from the skillet. The vinegar cuts through the grease like magic.

Removing Oil From Wool

To remove oil and grease stains from wool rugs and garments all you need is a blotter and a warm iron. Place the blotter over the grease spot and set the warm iron on top of the blotter. The heat will draw the oil or grease up into the blotter. Repeat the operation several times using a clean portion of the blotter each time.

Another method that has been used successfully, particularly in the case of road oil tracked in upon a rug, is to spread cornstarch over the spots and allow it to remain for an hour. The cornstarch will soak up the oil and when it is swept off the spots will have gone from the rug.

Cleaning Soot From Rugs

Soot from the fireplace or stove which has fallen on the rug calls for special treatment. Instead of sweeping or brushing, which tends to imbed the soil in the material, sprinkle the spot with cornmeal. Let it remain on the carpet for a few minutes, then brush it out. Repeat this treatment until the cornmeal brushes out clean.

Lipstick Stains

Because most lipsticks are colored with vegetable dyes, their stains will wash out with soap and water. Some others are a bit more stubborn. Such stains can be removed from colored fabrics by first rubbing the stain with cold cream and then removing with Carbona. On white fabrics use Carbona first, then hydrosulphite, which may be purchased at the drug store.

China Stains

Borax will clean burned marks from stained china. Let the china stand in a solution of borax and water for a day, then wash with water.

Added Paper Use

Don't throw away that wax paper that your bread comes wrapped in. It will do a slick job of polishing the nickel on your stove. It is also good for the teakettle.

Put Rubber Cap on Broom Handle

A rubber cap of the kind used on the end of crutches will prevent your broom from sliding and falling down when leaned against a wall or door. Then, too, it will not mar wall paper, varnished or painted woodwork or anything else with which it comes in contact. Such a cap can be obtained at most any drug store.

Removing Grease From Wall Paper

Unightly grease spots frequently can be removed by placing a piece of blotting paper over the spot and holding a warm iron against it. Be careful not to have the iron too hot. Dry bran rubbed on spotted wall paper is often effective in removing dirt and grease.

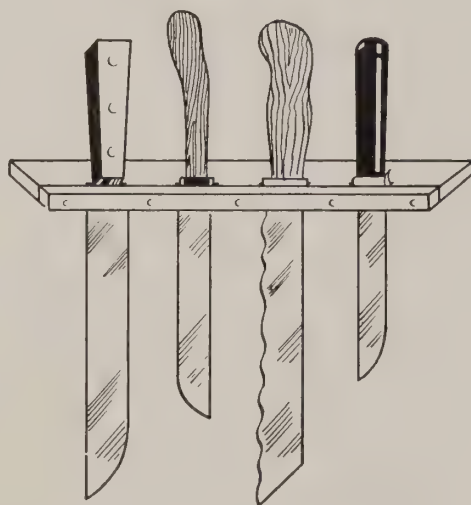
Dutch Oven Trouble

Occasionally you may find black specks in the food you have cooked in your Dutch oven. It isn't your fault, the oven was not properly tempered when made. You can overcome the difficulty by filling the oven full of water and soap flakes and boiling. If the specks still persist, try greasing the flaking oven with olive oil or suet and then really heat the whole works.

Removing Lime From Teakettle

If you are using hard water that causes lime to collect on the inside of your teakettle, try this simple method of removing it. Pour in two cupfuls of vinegar, fill with water and bring the mixture to a boil. After boiling a few minutes, remove the kettle from the fire and let it stand overnight. The lime will be taken up by the water which can be poured out. If the lime deposit is very heavy, it may be necessary to repeat the process one or more times.

Prevents Cut Fingers



Searching through a drawer full of sharp knives looking for the one you want is risky business. A handy knife rack such as illustrated will be a safety measure and a time saver. The back board is notched to fit various size knives and then a thin front strip is attached with screws. The whole can be mounted on the wall with brackets. Any handy man will be able to make you one that will just fit your needs.

Making Paraffin Jelly Tops Easy to Remove

You don't have to dig paraffin tops off your jellies and jams with a knife and run the risk of getting broken pieces mixed up with the spread. Next time you are putting up spreads, try this idea. Pour a thin layer of paraffin over the spread and let it harden. Then lay a piece of string across this cover so that the ends hang over opposite sides of the glass and pour on another layer of paraffin. To remove the paraffin, simply grasp each end of the string and pull upward.

Stops Corroding of Shaker Tops

Metal tops on salt shakers often corrode because of the salt. This can be stopped by covering the inside of the shaker top with melted paraffin. Before the paraffin has set, open the holes by punching them out with a pin or toothpick.

Refrigerator Tips

A piece of charcoal placed in the refrigerator will absorb food odors like Junior absorbs the food. An electric fan played on the freezing unit will hasten the defrosting operation. Hot water in the ice trays will do the same job.

Knife Protection

After you peel the onions, you have a knife that reeks. Plunging the offending blade into a raw potato will take away the onion smell.

Save the Saucepan

Burned enamel saucepans can often be reclaimed by filling the pan with salt water and allowing it to soak for two hours. Then bring the solution to a boil. Empty and use a moderate bit of rubbing and, presto, the burn is gone.

Keeping the Refrigerator Odorless

Many foods such as onions, fish, cucumbers and melons give off odors which contaminate other foods stored in the refrigerator. This contamination can be largely avoided and the refrigerator will remain sweet and clean if you will place a two-inch square of charcoal or a jelly glass of charcoal sticks in the corner of the food chamber.

Dry Clean Lard Buckets

Before washing lard buckets that are wanted for another use warm the bucket and rub with corn meal or bran. The bucket will then wash more easily.

Sandpaper Helps Tighten and Loosen

Jar Lids

Use a piece of sandpaper to grasp screw-on lids of fruit jars when tightening or loosening them. It will give you a firm grip on the lid and enable you to turn it quickly and with less effort.

Sour to Sweet

Sometimes in spite of the best of care, thermos bottles will turn sour. They can be made sweet again by soaking overnight with a teaspoonful of soap added to the water contents in the bottle.

No Stick—No Mess

You can overcome the discouragement which comes with the pan in which you have burned the sweet potatoes. You won't have charred bits sticking to the bottom if you will put in a piece of shortening the size of a walnut while cooking the sweets.

Flame Color is Key to Efficiency

Flame color is one indication of how efficiently a kerosene stove is operating. Yellow flame is a sign of inefficiency and should not be allowed for any length of time. A blue flame is a sign of efficient operation and may be obtained by trimming wick and proper adjustment of air.

Scouring Cutlery and Pans

To scour knives and other cutlery use a cork dipped in scouring powder. This method can also be used for scouring pans.

Marble in Teakettle Stops Liming

The nuisance of lime deposits on the inside of your teakettle can be overcome by keeping a marble in it. The marble will collect the lime and prevent the deposits.

Funnel Separates Eggs

A speck of yolk left in the white of an egg will prevent the white from whipping stiff. If you have trouble separating the yolk and white in the usual way try breaking the egg into a funnel. The white will run through while the yolk remains behind in the funnel.

Measuring Tip

When you are cooking something that calls for two cups of butter, (if you can find any), don't bother to measure. Just drop in the whole pound, for a pound measures just two cups.

Salt Conditioners

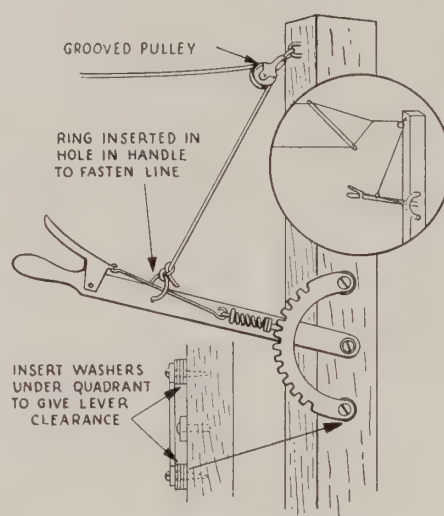
If your salt sticks during damp weather, a teaspoon of cornstarch thoroughly mixed with each cup of salt will recondition it to a free-flowing state.

To keep salt from caking in salt shakers, add several grains of rice. Every time the salt shaker is shaken the rice will break up any tendency of the salt to start caking.

Substitute Egg

If you have misplaced your darning egg and hubby's socks get too ventilated, an old radio tube will do a good job as a substitute egg.

Clothesline Tightener



If you have a handy man around the house, he can easily make this effective, easily operated clothesline tightener out of a pulley and an old automobile or truck emergency brake lever and quadrant or similar parts of a discarded farm implement. Bolt the lever to the post (or side of a building) and fasten the quadrant in place with long screws, using washers to provide clearance for the lever. Drill a hole in the lever handle and insert a ring to which the line can be fastened. The line can be made slack for hanging up clothes by raising the lever and stretched up tight after the clothes have been hung by pulling down on the lever.

This same device can be used for tightening two lines if an evener is provided as shown in the circle.

Keep Cake Fresh

Here are two good ways to keep a cut cake fresher. Cut the cake in half and slice from either side. After dessert, just slide the remaining two sides together. Then there is the old standby of putting a piece of bread against the cut surface and holding it there with toothpicks. Either method helps retain moisture.

No Fold Up

You can stop your whipped cream from going limp by the simple addition of a little granulated gelatin. Soak the gelatin in one tablespoon of cold milk and then dissolve in hot water. When it is nice and cool add to the cream drop by drop while you continue beating.

Pick the Right Time

Practically every cook, amateur and professional, knows that mashed potatoes are improved with the addition of milk. But most people add the milk at the wrong time. It should be added to the water in which the potatoes are cooking just before you are ready to mash. Then save the liquid for soup stock.

Sound Test

Here is a test to use on watermelons. Put your ear close to the melon, thump it lightly with your finger and listen closely. If the melon sez "pink" it is green. If it sez "punk" it is just ripe enough to get in your ears.

Tomato Care

The minute you get tomatoes in the house, put them in hot water for a minute or so. This will do double duty. It will make the skins come off easier, but even better, it will make the tomatoes keep better. Don't ask us why.

Carrying Meringue Pie Safely

If you are going to carry a meringue pie down to the school house or church, take this precaution: Place five or six toothpicks in and around the center of the pie before covering it with waxed paper. They will keep the paper away from the meringue.

Storing Lemons

Lemons that are to be stored for some time will keep better if they are coated lightly with melted paraffin. The paraffin can be applied best with a small brush. When they are to be used, the paraffin can be removed by heating slightly. The paraffin will then roll off or can be wiped off.

About the Lemon

The lowly lemon is really a good friend to all homemakers. The juice improves the taste of most fruit-flavored gelatines. Lemon juice adds zest to ices, sherbets and fruit drinks. Even the rind lends a fine flavor to beverages. Don't throw away the used cut lemon. Keep it at the kitchen sink to be used for your hands after washing the dishes.

A Jumble of Wisdom

It is better to buy lemons in quantity. Don't worry about them drying out. Keep them in water. Change the water once a week . . . A slice of bread in the kettle in which you cook cabbage, cauliflower or sprouts will cut down the odor somewhat . . . Sprinkle your clothes with hot water and they will be ready to iron within 15 minutes. Hot water penetrates much faster than cold . . . You can clean the cork mats you use on the table by rubbing them with sandpaper wrapped around a small block of wood . . . Melted alum will mend broken glasses without showing the crack . . . Boil beets and they peel easily. You can do the same thing with carrots after they are cooked . . . Beat eggs lightly when you intend using them as a thickening agent in custards and the like, but beat the Dickens out of them when you are looking for fluffiness for angel food cakes, omelets, etc. . . . A handy gadget for using granulated soaps economically is a 10 cent sugar shaker. It is grand when washing dishes, pots and pans . . . That new cake tin won't burn cakes if you butter the tin and place it in a moderate oven for 15 minutes. . . If you are going to heat milk in a saucepan, rinse the pan first with water and the milk won't stick . . . A few drops of kerosene and a bit of borax will make your window washing much simpler . . . To cut fresh bread, heat the blade of the knife in hot water; it prevents breaking and crumbling. The same treatment works on fudge or caramel candy . . . If the candles on your table look a bit soiled wipe them off with a cloth dampened in alcohol . . . Keep wooden ware away from the stove. The sudden drying on the outside will cause it to warp and even crack . . . Add a well beaten white of egg to mashed potatoes and then beat them together. They will look and taste much better . . . Soft soap laid over hard putty will soften the putty in a few hours so that you can remove the window pane easier . . . and finally, the addition of snails to that fish aquarium of yours will cut to the minimum that greenish deposit you have been noticing. Snails are excellent scavengers.

Table Stretcher

Next time you are confronted with the problem of a too-small tea table, use a cloth covered comp board that is a few inches bigger than the table. All of your guests will be grateful for the added space.

Lamb Secret

If the family doesn't like too strong a flavor of lamb, just cut two or three deep gashes in the leg and pour in some vinegar, then one-third teaspoon of sugar, and after salting and peppering, cut a tomato for the top. It helps make a grand gravy, too.

Meat Stretcher

There is nothing quite so discouraging as watching sausages shrink up to about half the size you anticipated. You can get around this nuisance by boiling the sausages for five minutes before you fry them. You will get more for your money.

Cook It Dry

It seems somewhat paradoxical, but adding water to meat roasts tends to make the meat dry. Even occasional basting isn't good, unless the meat is extra lean. Meat packers recommend that you cook your roasts without water.

Another "V"

Whisk broom trimmed into a sharp V point makes a perfect reacher for those elusive couch corners, or even floor corners.

Conceal Furniture Scratches

Small scratches on furniture often disappear when rubbed with nut meats. The oil in the nut darkens and conceals the scratch.

To Make Casters Slay in Furniture

If you are troubled by a loose caster that keeps falling out of some piece of furniture every time it is moved, try this. Remove the caster and pour melted paraffin in the hole. While the paraffin is still warm push the caster back into place. Allow it to set firmly before setting the piece of furniture upright again.

White Spots Away

Those white spots on mahogany furniture will respond nicely to this treatment. Smear a thick coating of vaseline over the spots. Let it stand for a couple of days and when you wipe off the vaseline you'll discover that the spots will come off with the grease.

Separate Lettuce

It is really exasperating to try and carefully separate lettuce leaves from a head, only to have them crumble and tear in your hands. You can get around this headache if you will just hold the tightly impacted head under a strong stream of cold water. The force of the water will separate the leaves nicely.

Prevent Picture Marks on Walls

Pictures hanging on walls for any length of time leave unsightly marks which are often difficult to remove or hide. Such marks can be prevented, however, if rubber headed tacks are driven into the back of the frame, one on each side at the bottom. The tacks will hold the picture away from the wall and prevent marking.

To Clean Furniture

You are in for a pleasant surprise the next time you clean furniture if you will saturate a cloth with weak tea and rub the furniture briskly and then rub dry with a soft cloth. Much more effective than plain water.

Scratch Eraser

Scratches on walnut furniture may be made invisible with iodine. While you are using this method you will no doubt get some of the stain on your fingers. Mix a tablespoon of lemon juice in a cup of hot water and the solution will remove the stains.

Good Duster

Take a piece of old flannel and dip it in paraffin oil. Allow to soak thoroughly for several hours. Then wring it out and wash it in lukewarm water before drying. Result: a grand home-made dust cloth which will help to polish your furniture while it picks up the dust.

Stop Rugs From Slipping

Small scatter rugs on polished floors can be very dangerous to life and limb because they slip so easily. This condition can be corrected by sewing old jar rubbers to the underside corners of the rug.

A Whiter 88

Those piano keys which have yellowed can cause a lot of embarrassment. But they can be made white again quite easily. Dip a piece of muslin in alcohol and give them a once over. If they don't respond to just alcohol, try flannel moistened with cologne water. And as a last resort, use fine powdered French chalk mixed with benzine.

Piano Scratches

Of course none of your own brood would think of it, but that ill-mannered neighbor child may kick up a ruckus in your house and in so doing leave a lovely scratch on the piano leg. Don't fret. Just rub butter over the wound and the mahogany color will come back like magic.

Moisture Helps Corn to Pop

Popcorn loses its popping power if it becomes too dry. The steam that forms from moisture inside the kernel causes the popping. If corn does not pop well, put a tablespoon or two of water in a glass jar, fill the jar with corn, shake well, and let it stand a week or so.

For Wicker Furniture

Next time you have to scrub that wicker furniture of yours, do the job with salt water. The salt not only cleans but stiffens the wood into a semblance of newness again.

It'll Really Shine

Equal parts of lemon juice and turpentine will bring out a high polish on your furniture. Wipe off the excess oil and then rub hard with a nice clean woolen cloth.

Making Rag Rugs Last Longer

When you shake your rag rugs, always remember to hold them by the sides. When held by the ends, the weight of the rug has a tendency to pull the threads apart.

Use Ammonia Water

Never clean matting with soap. Ammonia and cold water is the proper combination. The results are much better and the matting dries in much less time.

Removing Match Scratches on Paint

Try rubbing match scratches on painted wood with a piece of lemon. After the scratches have been removed, rub the surface with vaseline. This will make it practically impossible to scratch matches on the spot again.

For White Marble

White marble articles can be made spic and span by putting a little borax in a saucer. Then wrap a cut lemon in a cloth. Dip the cloth-wrapped lemon into some tepid water, then into the borax. Then rub the marble.

Gum Remover

Gum, which has been carelessly dropped on the carpet or upholstery, can be removed usually if you will just rub the gum with a piece of ice. Be patient, as it sometimes takes quite a bit of rubbing.

Cleans Milk Strainer Screens

It has been found that steel wool is very effective in cleaning milk strainer screens.

Keep Glass Clean When Painting

When painting window frames it is sometimes difficult to keep the paint from getting on the window glass. If, before starting to paint, the glass is rubbed lightly with petroleum jelly, paint can be easily removed where it has smeared on the glass. Be careful not to get any of the petroleum jelly on the surface to be painted.

Dry Removal of Paint

Here is a formula for a paint remover that is worked after it has dried. The advantages of such a procedure are obvious.

To mix the remover take five parts waterglass and add one part of soda lye and one part of ammonia. Apply the remover to the surface from which paint or varnish is to be removed, using an old brush as the lye may injure the bristles. When the remover has dried, the paint or varnish may be rubbed off. Should some stick, make another application and repeat the operation. With such an easy procedure there is no excuse for wasting materials by applying paint or varnish over old checked or peeling paint.

Using Staircases While Painting Them

A staircase coated with fresh paint is out of use unless a narrow track is left unpainted at one side or in the center, to be covered later when the rest of the paint is dry. But when a surface has been coated piecemeal in this fashion, it has an uneven look. A better method is to paint every other step, using the unpainted ones for ascending the staircase, and coating them later when the painted ones are dry. As each step is painted also paint the riser belonging to the next step. In this way the fresh paint will not be injured if a riser is accidentally kicked in using the stairway.

Exterminating Moles

If you are troubled with moles in the lawn, try this remedy. Push down into the runner with a stick or peg and pour about a teaspoon of arsenate of lead or paris green into the hole. Cover up the hole with a clod of earth to shut out the light. Do this in several places and the moles will usually disappear. This method is said to be more effective in dry weather.

Paint Stickiness

If newly dried paint still remains sticky, wash with plain cold water. It does the trick every time.

Paint Remover

A home remedy for paint spots can be prepared in the kitchen. To two cooking spoons of starch and one quart of water add two spoons of lye, that is, potash of lye. Use this mixture cold, rubbing it on with the mop. Rinse the wood with water, then with vinegar. Be careful of that lye, 'cause it burns.

Pick Up Glass Slivers

When glass shatters there are frequently a lot of very fine slivers that are very difficult to pick up without danger of getting them into your fingers and, of course, there is always the danger to youngsters if all these small slivers are not collected. The slivers can be safely picked up with a moist piece of absorbent cotton.

Keep Laundry From Freezing to Line

In cold weather laundry hung outside may freeze to the line and clothespins. This can be overcome by boiling the clothesline and clothespins in salt water for about a half-hour.

Mothball Smell Drives Away Mice

Mothballs or flake naphthalene offer protection against both mice and clothes moths, but for different reasons. Mice dislike the smell of the flakes, while moths die from the fumes. In the fall, when mice from outdoors come into cellars and attics, flakes scattered over and around stored mattresses, upholstered furniture, clothes, books and bags of seed are good and cheap insurance against mice.

Don't Roll 'Em

If you are warring on rats, and who isn't, be sure to never roll up your carpets when you are storing them. The rats can't do nearly as much damage if the rugs are left flat.

Moth-Killer

An effective way to get moths out of carpets is to take the carpets out in the open yard and soak them with bensoline. Be sure there are no open flames in the neighborhood.

Zipper Pillows

Save the zippers from old work shirts and dresses and sew them into the ends of pillows. When the ticking becomes soiled it's a simple matter to open the end and shake the feathers out into clean flour sacks to be hung in the sun to air while the tickings are being washed.

Get Longer Life From Linens

Table linens will last longer if the following precautions are taken:

1. Be careful in laundering. Avoid hard rubbing and scrubbing and keep them white by hanging in the sun rather than by using strong bleaches. Washing soda or strong alkali solutions in very hot water tend to injure linen as well as cotton and rayon.
2. When ironing table linens, try to have as few folds as possible and fold them in by hand instead of using the iron. If a center crease is necessary, change the fold with each ironing in order to prevent undue wear.
3. Napkins and tablecloths don't need starch. Linen fabrics may crack if starched too stiffly or if they are allowed to freeze while drying.
4. When good napkins and tablecloths develop holes, repair them with yarn from the fabric. If patching is needed, cut a piece from an old cloth of a similar pattern and work a monogram over the patch.
5. When linens are to be stored for a period of time, they will keep best in a well-ventilated closet where it is cool, dry and dark. Be sure they are clean but do not iron before storing. Wrap both linens and cottons in tissue paper or old sheeting.

Adhesive Tape Saves Sheets

Here are two new uses for adhesive tape, that multi-purpose household necessity. Pasted around the corners of bed springs and wherever there are sharp projections it will prevent the sheets from getting caught and torn.

Pieces of adhesive tape pasted on the bottoms of baby's shoes will help keep him from slipping while he is learning to walk.

Oilcloth Mending Trick

Your ever-handly, ever-useful roll of adhesive tape will come to the rescue to mend oilcloth that has been accidentally cut or torn. By putting a piece of adhesive tape over the cut on the wrong side and pressing the edges of the cut tightly against it you can prevent the cut from becoming an unsightly hole.

Shoe Brush

When the small-fry decide to make mud pies, you can be prepared for their homecoming if you will nail an old scrubbing brush upside down on the stoop. Of course, you may have to stand there 24 hours to remind the youngsters to use it.

Skirt Marker

The man who built your house built in a good skirt marker and probably forgot to tell you about it. But next time you are trying to make the hem of your skirt hang straight, just rub a little chalk on the edge of a window sill which hits you just about hip high. Do a turn around, allowing the chalk to mark the skirt. Then all you have to do is measure down from the chalk mark and the skirt will be just right.

Sandpaper Restores Suede Appearance

Suede shoes need regular brushing with a rubber sponge to preserve their appearance. When suede wears smooth, a few light strokes with the finest sandpaper will bring back its roughened surface. On the other hand, glossy leathers clean best with saddle soap, after which polish further softens the leather and improves appearance.

Remove Lettering From Sacks

Cloth flour sack material can be put to many uses if the printing is removed. This can be done by dipping the sacks in kerosene oil, washing thoroughly in cold water and then boiling.

Gauge Number Indicates Hose Quality

When purchasing hose, it's a good idea to check the gauge number. This indicates the number of wales in the stocking, or the number of stitches cast onto the needle bar. The more stitches there are, the more elasticity a stocking should have. Some gauge numbers, for example, are 39, 42, 45, 48, 51 and so on. These figures indicate the number of stitches in 1½ inches on the needle bar. Thus, a 51 gauge hose would have 12 more stitches in every 1½ inch than the 39 gauge, and would be more elastic.

Washing Chenille Successfully

Cotton chenille bedspreads (usually marked washable when purchased) can be laundered at home successfully. Tub the spread in warm, sudsy water, rinse it in warm water, and hang it up to dry—outdoors if possible. When it is almost dry, shake it well. This is much easier to do if there is someone to hold the other end of the spread and help keep it off the ground. To fluff up the chenille, hang the spread over a line or lay it on a table and rub the chenille briskly with the palms of the hands to raise the nap. Brushing with a whisk broom will also help to make the nap soft and fluffy.

To Kill Dandelions

Grubbing dandelions out of the lawn is a slow, tedious task. A much easier and quicker method of ridding your lawn of the pests is to squirt a little gasoline from a long spout oil can into the heart of each plant. This treatment does not injure surrounding grass and can be repeated to kill any plants which were missed the first time.

Restoring Color to Fabrics

Color taken out by an acid can usually be restored with an alkali. Color taken out by an alkali can generally be restored by an acid.

Fireproof Decorating Cotton

Absorbent cotton batting used as snow in Christmas decorations can be fireproofed by sprinkling it with a solution of the following mixture: 1¾ ounces borax, ¾ ounces boric acid, dissolved in 1 pint of hot water. After treating the cotton, do not handle until it is thoroughly dry, for to do so will remove its fluffiness. This fireproofing mixture is the same as that often used in fireproofing clothing.

Fireproof Christmas Trees

Christmas trees can be treated with a home-prepared fireproofing solution that also aids in holding the needles for a longer time. The tree should be treated as soon as you bring it home, if best results are desired. To do this, make a solution of ammonium sulfate — 1 pound of ammonium sulfate to 1½ pints of water in a crock or galvanized pail. Use an amount of ammonium sulfate equal to one-fourth the weight of the tree. Cut off the dried butt end and stand the tree in this solution. This cut should be made at fairly cool temperatures—55 to 65 degrees give best results. If ammonium sulfate is not available, calcium chloride can be used.

Cleaning Sooty Chimneys

If the chimney gets sooty inside it usually can be cleaned by throwing the zinc from several old jar tops into a very hot fire. If jar tops are not available, an old dry cell chopped up or a couple of flashlight batteries will serve the purpose. There are also a number of commercial preparations for the purpose.

If the building has a shingle or other combustible roof, this cleaning operation should be undertaken only when the roof is wet or heavily covered with snow as there is danger of setting it afire.

Quantity of Seeds and Number of Plants Required for 100 Feet of Row, Depths of Planting, and Distances Apart for Rows and Plants

Crop	Required for 100 feet of row		Depth for planting seed	Distance apart				
	Seed	Plants		Rows		Plants in the row		
				Horse cultivation	Hand Cultivation			
			Inches	Feet				
Asparagus.....	1 ounce.....	75	1	-1½	4	-5	1½ to 2 feet.....	18 inches
Beans—Lima, bush.....	1 pint.....		1	-1½	2½-3		2 feet.....	3 to 4 inches
Lima, pole.....	do.....		1	-1½	3	-4	3 feet.....	3 to 4 feet
Snap, bush.....	do.....		1	-1½	2½-3		2 feet.....	3 to 4 inches
Snap, pole.....	½ pint.....		1	-1½	3	-4	do.....	3 feet
Beet.....	2 ounces.....		1		2	-2½	14 to 16 inches.....	2 to 3 inches
Broccoli—Heading.....	1 packet.....	50- 75	½		2½-3		2 to 2½ feet.....	14 to 24 inches
Sprouting.....	do.....	50- 75	½		2½-3		do.....	do.
Brussels sprouts.....	do.....	50- 75	½		2½-3		do.....	do.
Cabbage.....	do.....	50- 75	½		2½-3		do.....	do.
Cabbage, Chinese.....	do.....		½	2	-2½		18 to 24 inches.....	8 to 12 inches
Cardoon.....	do.....	35	½		3		3 feet.....	3 feet
Carrot.....	do.....		½	2	-2½		14 to 16 inches.....	2 to 3 inches
Cauliflower.....	do.....	50- 75	½		2½-3		2 to 2½ feet.....	14 to 24 inches
Celeriac.....	do.....	200-250	⅛		2½-3		18 to 24 inches.....	4 to 6 inches
Celery.....	do.....	200-250	⅛		2½-3		do.....	do.
Chard.....	2 ounces.....		1	2	-2½		do.....	6 inches
Chervil.....	1 packet.....		½	2	-2½		14 to 16 inches.....	2 to 3 inches
Chicory, witloof.....	do.....		½	2	-2½		18 to 24 inches.....	6 to 8 inches
Chives.....	do.....		½		2½-3		14 to 16 inches.....	In clusters
Collards.....	do.....		½	3	-3½		18 to 24 inches.....	18 to 24 inches
Corn salad.....	do.....		½		2½-3		14 to 16 inches.....	1 foot
Corn, sweet.....	¼ pint.....		2	3	-3½		2 to 3 feet.....	Drills, 14 to 16 inches; hills, 2½ to 3 feet
Cress—Upland.....	1 packet.....		⅛- ¼	2	-2½		14 to 16 inches.....	2 to 3 inches
Water.....	do.....		⅛- ¼	2	-2½		18 to 24 inches.....	4 to 6 inches
Cucumber.....	do.....		1	6	-7		6 to 7 feet.....	Drills, 3 ft.; hills, 6 ft.
Dandelion.....	do.....		½		2½-3		14 to 16 inches.....	8 to 12 inches
Dasheen.....	½ peck.....	50	2	-3	3½-4		3½ to 4 feet.....	2 feet
Eggplant.....	1 packet.....	50	½		3		2 to 2½ feet.....	3 feet
Endive.....	do.....		½		2½-3		18 to 24 inches.....	12 inches
Florence fennel.....	do.....		½		2½-3		do.....	4 to 6 inches
Garlic.....	1 pound.....		1	-2	2½-3		14 to 16 inches.....	2 to 3 inches
Horseradish.....	Cuttings.....	50- 75	2		3	-4	2 to 2½ feet.....	18 to 24 inches
Jerusalem artichoke.....	1 to 2 quarts.....	25- 35	2	-3	3	-4	2 to 3 feet.....	2 to 3 feet
Kale.....	1 packet.....		½		2½-3		18 to 24 inches.....	12 to 15 inches
Kohlrabi.....	do.....		½		2½-3		14 to 16 inches.....	5 to 6 inches
Leek.....	do.....		½-1		2½-3		do.....	2 to 3 inches
Lettuce.....	do.....	100	½		2½-3		do.....	15 inches
Martynia.....	do.....		1	3	-4		2½ to 3 feet.....	2 feet
Muskmelon.....	do.....		1	6	-7		6 to 7 feet.....	Hills, 6 feet
Mustard.....	do.....		½		2½-3		14 to 16 inches.....	12 inches
Okra.....	2 ounces.....		1	-1½	3	-3½	3 to 3½ feet.....	2 feet
Onion—Plants.....		400	1	-2	2	-2½	14 to 16 inches.....	2 to 3 inches
Seed.....	1 packet.....		½-1	2	-2½		do.....	do.
Sets.....	1 quart.....		1	-2	2	-2½	do.....	do.
Parsley.....	1 packet.....		⅛	2	-2½		do.....	4 to 6 inches
Parsley, turnip-rooted.....	do.....		⅛- ¼	2	-2½		do.....	2 to 3 inches
Parsnip.....	do.....		½	2	-2½		18 to 24 inches.....	do.
Peas.....	1 pint.....		2	-3	2	-4	1½ to 3 feet.....	1 inch
Peppers.....	1 packet.....	50- 70	½		3	-4	2 to 3 feet.....	18 to 24 inches
Physalis.....	do.....		½	2	-2½		1½ to 2 feet.....	12 to 18 inches
Poke.....	do.....	25- 40	½-1	3	-3½		3 to 3½ feet.....	3 feet
Potato.....	5 to 6 pounds.....		4		2½-3		2 to 2½ feet.....	10 to 18 inches
Pumpkin.....	1 ounce.....		1	-2	5	-8	5 to 8 feet.....	3 to 4 feet
Radish.....	1 ounce.....		½	2	-2½		14 to 16 inches.....	1 inch
Rhubarb.....		25- 35			3	-4	3 to 4 feet.....	3 to 4 feet
Salsify.....	1 ounce.....		½	2	-2½		18 to 24 inches.....	2 to 3 inches
Shallots.....	1 pound (cloves).....		1	-2	2	-2½	14 to 16 inches.....	do.
Sorrel.....	1 packet.....		½	2	-2½		18 to 24 inches.....	5 to 8 inches
Spinach.....	1 ounce.....		½	2	-2½		14 to 16 inches.....	3 to 4 inches
Spinach, New Zealand.....	do.....		1	-1½	3	-3½	3 feet.....	18 inches
Squash—Bush.....	½ ounce.....		1	-2	4	-5	4 to 5 feet.....	Drills, 15-18"; hills, 4 ft.
Vine.....	1 ounce.....		1	-2	8	-12	8 to 12 feet.....	Drills, 2-3 ft.; hills, 4 ft.
Sweet potato.....	5 pounds.....	*75	2	-3	3	-3½	3 to 3½ feet.....	12 to 14 inches
Tomato.....	1 packet.....	35- 50	½		3	-4	2 to 3 feet.....	1½ to 3 feet
Turnip greens.....	do.....		¼- ½	2	-2½		14 to 16 inches.....	2 to 3 inches
Turnips and rutabagas.....	½ ounce.....		¼- ½	2	-2½		do.....	do.
Watermelon.....	1 ounce.....		1	-2	8	-10	8 to 10 feet.....	Drills, 2-3 ft.; hills, 8 ft.

* Slips.

REFERENCE SECTION

Weights and Measures

CUBIC MEASURE

1,728 cubic inches.....	1 cubic foot
27 cubic feet.....	1 cubic yard
128 cubic feet.....	1 cord (wood)
40 cubic feet.....	1 ton (shipping)
2,150.42 cubic inches..	1 standard bushel
213 cubic inches.....	1 standard gallon
1 cubic foot.....	about 4/5 of a bushel

SQUARE MEASURE

144 square inches.....	1 square foot
9 square feet.....	1 square yard
30¼ square yards.....	1 square rod
40 square rods.....	1 rood
4 roods.....	1 acre
160 square rods.....	1 acre
640 acres.....	1 square mile
43,560 square feet.....	1 acre
6,272,640 square inches.....	1 acre

DRY MEASURE

2 pints.....	1 quart
8 quarts.....	1 peck
4 pecks.....	1 bushel
36 bushels.....	1 chaldron

LIQUID MEASURE

4 gills.....	1 pint
2 pints.....	1 quart
4 quarts.....	1 gallon
31½ gallons.....	1 barrel
2 barrels.....	1 hogshead

AVOIRDUPOIS WEIGHT

27 11/32 grains.....	1 dram
16 drams.....	1 ounce
16 ounces.....	1 pound
25 pounds.....	1 quarter
4 quarters.....	1 hundredweight
2,000 pounds.....	1 ton
2,240 pounds.....	1 long ton

LONG MEASURE

12 inches.....	1 foot
3 feet.....	1 yard
5½ yards or 16½ feet.....	1 rod
40 rods.....	1 furlong
8 furlongs or 5,280 feet...	1 statute mile
3 miles.....	1 league

SURVEYOR'S MEASURE

7.92 inches.....	1 link
25 links.....	1 rod
4 rods.....	1 chain
10 square chains or 160 sq. rods...	1 acre
640 acres.....	1 square mile or section
36 square miles.....	1 township

MARINER'S MEASURE

6 feet.....	1 fathom
120 fathoms.....	1 cable length
7½ cable lengths.....	1 mile
5,280 feet.....	1 statute mile
6,080 feet.....	1 nautical mile
3 marine miles.....	1 marine league

MISCELLANEOUS

9 inches.....	1 span
12 dozen.....	1 gross
1 U. S. gallon.....	231 cubic inches
1 British (Canadian) gallon.....	277.274 cubic inches
1 pint of water weighs.....	1.0431 lbs.
1 gallon of water weighs.....	8.3448 lbs.
1 knot.....	1 1/6 mile
100 pounds of nails.....	1 keg
196 pounds of flour.....	1 barrel
150 pounds potatoes.....	1 barrel
280 pounds salt.....	1 barrel
1 lb. of wheat is about.....	1 pint
1 lb. of soft butter is about.....	1 pint
1 lb. of sugar is about.....	1 pint
1 foot is about.....	3/10 of a meter

Cubic Inches and Cubic Feet

Common Measuring Units

Dry Measure

1 pint	33.60	cubic inches
1 quart	67.20	cubic inches
1 peck	537.69	cubic inches
1 bushel	1.224	cubic feet
1 bushel	2,150.42	cubic inches

Liquid Measure

1 gill	7.22	cubic inches
1 pint	28.87	cubic inches
1 quart	57.75	cubic inches
1 gallon	.1337	cubic feet
1 gallon	.231	cubic inches

Miles per Hour Reduced to

Feet per Minute

1½ M. P. H. =	132 F. P. M.
1¾ M. P. H. =	152 F. P. M.
2 M. P. H. =	176 F. P. M.
2¼ M. P. H. =	198 F. P. M.
2½ M. P. H. =	220 F. P. M.
2¾ M. P. H. =	242 F. P. M.
3 M. P. H. =	264 F. P. M.

Rates of Travel

To determine feet of travel per minute, multiply miles per hour by 88.

To determine feet of travel per second, multiply miles per hour by 1.467.

To determine miles of travel per hour, multiply feet per minute by .01136.

Horsepower Equivalent

A horsepower is equivalent to raising 33,000 pounds one foot per minute, or 550 pounds one foot per second.

Circumference and Areas of Circle

Diameter in Inches	Circumference in Inches	Area Square Inches	Area Square Feet
1	3.142	.7854	.005454
2	6.283	3.1416	.021816
3	9.425	7.0686	.049081
4	12.566	12.5664	.087266
5	15.708	19.6350	.136354
6	18.850	28.2743	.196350
7	21.991	38.4845	.267254
8	25.133	50.2655	.349066
9	28.274	63.6173	.441786
10	31.416	78.5398	.545415

Properties of the Circle

To obtain the area of a circle, square the diameter and multiply by .7854 or square the radius and multiply by 3.1416.

To obtain the circumference of a circle multiply the diameter by 3.1416.

To obtain the diameter of a circle multiply the circumference by .3183.

Estimating Wall Paper Requirements

The following chart will be found useful in figuring the number of rolls of wall paper required for various sizes of rooms. The chart is based upon the use of standard single rolls of wall paper, 8 yards long and 18 inches wide. Deduct one roll of side wall paper for every two doors or windows of ordinary dimensions, or for each 50 square feet of opening.

SINGLE ROLLS OF PAPER

Size of Room	Height of Ceiling			Yds. of Border	Rolls for Ceiling
	8 Ft.	9 Ft.	10 Ft.		
4x8	6	7	8	9	2
4x10	7	8	9	11	2
4x12	8	9	10	12	2
6x10	8	9	10	12	2
6x12	9	10	11	13	3
8x12	10	11	13	15	4
8x14	11	12	14	16	4
10x14	12	14	15	18	5
10x16	13	15	16	19	6
12x16	14	16	17	20	7
12x18	15	17	19	22	8
14x18	16	18	20	23	8
14x22	18	20	22	26	10
15x16	15	17	19	23	8
15x18	16	18	20	24	9
15x20	17	20	22	25	10
15x23	19	21	23	28	11
16x18	17	19	21	25	10
16x20	18	20	22	26	10
16x22	19	21	23	28	11
16x24	20	22	25	29	12
16x26	21	23	26	31	13
17x22	19	22	24	28	12
17x25	21	23	26	31	13
17x28	22	25	28	32	15
17x32	24	27	30	35	17
17x35	26	29	32	37	18
18x22	20	22	25	29	12
18x25	21	24	27	31	14
18x28	23	26	28	33	16
20x26	23	26	28	33	17
20x28	24	27	30	34	18
20x34	27	30	33	39	21

Weights of Common Nails

Size	Length Inches	Gauge No.	Diam. of Head	Approx. No. to Lb.
2d	1	15	7 Ga.	876
3d	1¼	14	6 Ga.	568
4d	1½	12½	4 Ga.	316
5d	1¾	12½	4 Ga.	271
6d	2	11½	2½ Ga.	181
7d	2¼	11½	2½ Ga.	161
8d	2½	10¼	1½ Ga.	106
9d	2¾	10¼	1½ Ga.	96
10d	3	9	0½ Ga.	69
12d	3¼	9	0 Ga.	63
16d	3½	8	¾-In.	49
20d	4	6	¾-In.	31
30d	4½	5	¾-In.	24
40d	5	4	1½-In.	18
50d	5½	3	1½-In.	14
60d	6	2	1½-In.	11

6 Per Cent Interest Table

TIME	PRINCIPAL									
	\$1	\$2	\$3	\$4	\$5	\$10	\$20	\$50	\$100	\$1000
1	\$.00	\$.00	\$.00	\$.00	\$.00	\$.00	\$.01	\$.01	\$.02	\$.17
2	.00	.00	.00	.00	.00	.00	.01	.02	.03	.34
3	.00	.00	.00	.00	.00	.01	.01	.03	.05	.50
4	.00	.00	.00	.00	.00	.01	.01	.03	.07	.67
5	.00	.00	.00	.00	.00	.01	.02	.04	.08	.83
6	.00	.00	.00	.00	.01	.01	.02	.05	.10	1.00
7	.00	.00	.00	.00	.01	.01	.02	.06	.12	1.17
8	.00	.00	.00	.01	.01	.01	.03	.07	.13	1.33
9	.00	.00	.00	.01	.01	.02	.03	.08	.15	1.50
10	.00	.00	.01	.01	.01	.02	.03	.08	.17	1.67
15	.00	.01	.01	.01	.01	.03	.05	.13	.25	2.50
20	.00	.01	.01	.01	.02	.03	.07	.17	.33	3.33
25	.00	.01	.01	.02	.02	.04	.08	.21	.42	4.17
30	.01	.01	.02	.02	.03	.05	.10	.25	.50	5.00
33	.01	.01	.02	.02	.03	.06	.11	.28	.55	5.50
63	.01	.02	.03	.04	.05	.11	.21	.53	1.05	10.50
93	.02	.03	.05	.06	.08	.16	.31	.78	1.55	15.50
1	.01	.01	.02	.02	.03	.05	.10	.25	.50	5.00
2	.01	.02	.03	.04	.05	.10	.20	.50	1.00	10.00
3	.02	.03	.05	.06	.08	.15	.30	.75	1.50	15.00
4	.02	.04	.06	.08	.10	.20	.40	1.00	2.00	20.00
5	.03	.05	.08	.10	.13	.25	.50	1.25	2.50	25.00
6	.03	.06	.09	.12	.15	.30	.60	1.50	3.00	30.00
7	.04	.07	.11	.14	.18	.35	.70	1.75	3.50	35.00
8	.04	.08	.12	.16	.20	.40	.80	2.00	4.00	40.00
9	.05	.09	.14	.18	.23	.45	.90	2.25	4.50	45.00
10	.05	.10	.15	.20	.25	.50	1.00	2.50	5.00	50.00
11	.06	.11	.17	.22	.28	.55	1.10	2.75	5.50	55.00
12	.06	.12	.18	.24	.30	.60	1.20	3.00	6.00	60.00

Compound Interest

Principal of money loaned doubles at:

- 2 % in 35 years and 1 day.
- 2½% in 28 years and 25.6 days.
- 3 % in 23 years and 162.81 days.
- 3½% in 20 years and 53.51 days.
- 4 % in 17 years and 244.06 days.
- 4½% in 15 years and 271.25 days.
- 5 % in 14 years and 74. days.
- 6 % in 11 years and 325.88 days.

The interest compounded annually for any number of dollars may be found by multiplying the interest for 1.00 by the given number.

To Find Interest on any Sum for any Time

Point off two places from the right of the principal and multiply it by the number of months. One-half the result is the interest at 6 per cent. Deduct one-sixth for 5 per cent, one-third for 4 per cent; add one-sixth for 7 per cent, one-third for 8 per cent, etc.

Weight of Water

- 1 cubic inch03617 pounds
- 1 cubic foot62.5 pounds
- 1 cubic foot7.48052 U.S. gal.
- 1 U. S. gallon8.355 pounds

Easter Sunday Dates

The following table gives the dates for Ash Wednesday (the beginning of the Lenten period) and Easter Sunday in each of the years listed:

Year	Ash Wednesday	Easter Sunday
1946.....	Mar. 6	April 21
1947.....	Feb. 19	April 6
1948.....	Feb. 11	Mar. 28
1949.....	Mar. 2	April 17
1950.....	Feb. 22	April 9
1951.....	Feb. 7	Mar. 25
1952.....	Feb. 27	April 13

One Month to Same Day in Another

From	to Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
January	365	31	59	90	120	151	181	212	243	273	304	334
February	334	365	28	59	89	120	150	181	212	242	273	303
March	306	337	365	31	61	92	122	153	184	214	245	275
April	275	306	334	365	30	61	91	122	153	183	214	244
May	245	276	304	335	365	31	61	92	123	153	184	214
June	214	245	273	304	334	365	30	61	92	123	153	183
July	184	215	243	274	304	335	365	31	62	92	123	153
August	153	184	212	243	273	304	334	365	31	61	92	122
September	122	153	181	212	242	273	303	334	365	30	61	91
October	92	123	151	182	212	243	273	304	335	365	31	61
November	61	92	120	151	181	212	242	273	304	334	365	30
December	31	62	90	121	151	182	212	243	274	304	335	365

Explanation—To find the number of days from January 20th to December 20th, follow horizontal line opposite January until you reach the column headed by December, when you will find 334, representing the required number of days, and so on with the other months. During leap year, if February enters into the calculation, add one day to result.

To Compute Board Feet

A board foot is the equivalent of a piece of lumber 1 inch thick, 12 inches wide and 1 foot long, or in other words, a square foot of lumber 1 inch thick.

To find the number of board feet in a piece of lumber:

1. Multiply together:

Width in inches
Thickness in inches x $\frac{\text{length}}{12}$ x length

in feet, or

2. Multiply square feet of surface by thickness in inches.

Doubling any single dimension of a piece of lumber doubles its volume, doubling two dimensions increases its volume fourfold, and doubling three dimensions increases the volume eightfold.

To Change Board Feet to Lineal Feet

Multiply Board Feet of 1"x 2" by 6.
Multiply Board Feet of 1"x 3" by 4.
Multiply Board Feet of 1"x 4" by 3.
Multiply Board Feet of 1"x 5" by $2\frac{2}{5}$.
Multiply Board Feet of 1"x 6" by 2.
Multiply Board Feet of 1"x 8" by $1\frac{1}{2}$.
Multiply Board Feet of 1"x10" by $1\frac{1}{5}$.
Multiply Board Feet of 1"x12" by 1.

Weights of Structural Materials

(Pounds per Cubic Foot)

Material	Weight
Common Brick	125
Cement	94
Coal (Soft Lump)	54
Concrete	150
Cypress	29
Douglas Fir	30
Earth (rammed)	100
Gravel	120
Hemlock	28
Lime	53
Limestone	164
Oak, red	44
Oak, white	47
Pine, yellow	36
Sand	100
Water	62.4

Common Measuring Units Per Cubic Foot**Dry Measure**

1 cubic foot.....	51.043 pints
1 cubic foot.....	25.522 quarts
1 cubic foot.....	3.190 pecks
1 cubic foot.....	.804 bushels

Liquid Measure

1 cubic foot.....	59.84 pints
1 cubic foot.....	29.92 quarts
1 cubic foot.....	7.481 gallons

Commodity Measures and Weights

Commodity	Unit ¹	Approximate net weight
		Pounds
Alfalfa seed...	Bushel.....	60
Apples, fresh..	{ Bushel.....	48
	{ Barrel.....	140
Barley.....	Bushel.....	48
Beans:		
Lima, dry...	Bushel.....	56
Other, dry..	{ Bushel.....	60
	{ Sack.....	100
Lima, unshelled.	Bushel.....	32
Snap.....	Bushel.....	30
Bluegrass seed.	Bushel.....	14-30
Buckwheat.....	Bushel.....	48-52
Butter.....	Tub.....	63
Cabbage.....	1½-bu. hmp. r.	50
Carrots:		
Without tops	Bushel.....	50
Clover seed...	Bushel.....	60
Corn:		
Ear, husked..	Bushel.....	70
Shelled.....	Bushel.....	56
Green, sweet.	Bushel.....	35
Meal.....	Bushel.....	50
Oil.....	Gallon.....	Av. 7.5
Sirup.....	Gallon.....	11.5
Cowpeas.....	Bushel.....	60
Cream, 30% butterfat...	Gallon.....	8.43
Eggs, avg. size..	Case, 30 doz..	45
Flaxseed.....	Bushel.....	56
Flour, various..	Barrel.....	196
Grain		
sorghums...	Bushel.....	56 and 50
Hempseed.....	Bushel.....	44
Honey.....	Gallon.....	12
Hungarian millet seed...	Bushel.....	48 and 50
Kafir.....	Bushel.....	56 and 50
Linseed oil....	Gallon.....	Av. 7.5
Malt.....	Bushel.....	34
Maple sirup....	Gallon.....	11
Milk (specific grav. 1.032).	Gallon.....	8.6
Millet.....	Bushel.....	48-50
Molasses.....	Gallon.....	11.75
Oats.....	Bushel.....	32
	{ Sack.....	100
	{ Sack.....	50
Onions, dry...	{ Bushel, late..	57
	{ Bushel, early..	50
Onions, green, bunched....	Crate.....	50-55
Onion sets.....	Bushel.....	28-32
Orchard grass seed.....	Bushel.....	14
Pears.....	Bushel.....	50
Peas:		
Green, unshelled..	Bushel.....	30
Dry.....	Bushel.....	60
Perilla seed...	Bushel.....	37-40
Popcorn:		
On ear.....	Bushel.....	70
Shelled.....	Bushel.....	56
	{ Bushel.....	60
Potatoes.....	{ Barrel.....	165
Rapeseed.....	Bushel.....	50 and 60
Redtop seed...	Bushel.....	14-40
Rice:		
	{ Bushel.....	45
	{ Bag.....	100
	{ Barrel.....	162
	{ Pocket or bag.	100

¹ See footnote at end of table.

Commodity Measures and Weights

(Continued)

Commodity	Unit ¹	Approximate net weight
Rye.....	Bushel.....	56
Sesame seed...	Bushel.....	46
Sorgo:		
Seed.....	Bushel.....	50
Sirup.....	Gallon.....	11.4
Soybeans.....	Bushel.....	60
Soybean oil....	Gallon.....	7.5
Spelt.....	Bushel.....	40
Sudan grass seed.....	Bushel.....	40
Sugarcane sirup	Gallon.....	11.25
Sunflower seed.	Bushel.....	24 and 32
Sweet potatoes.	Bushel.....	55
Timothy seed..	Bushel.....	45
Turpentine....	Gallon.....	7.23
Velvetbeans (hulled)....	Bushel.....	60
Vetch.....	Bushel.....	60
Water, 60° F..	Gallon.....	8.33
Wheat.....	Bushel.....	60
Various commodities.	Short ton....	2,000

¹ Standard bushel used in the United States contains 2,150.42 cubic inches; the gallon, 231 cubic inches and the standard fruit and vegetable barrel, 7,056 cubic inches. Such large-sized products as apples and potatoes are sometimes sold on the basis of a heaped bushel, which would exceed somewhat the 2,150.42 cubic inches of a bushel basket level full. This also applies to such products as sweet potatoes, peaches, green beans, green peas, spinach, etc.

From U. S. Department of Agriculture

Estimating Bricks for Chimneys

To find the number of bricks in chimneys of a given size, multiply the total height by the number of bricks per foot as shown in the following table:

Inside measurement	Actual brick for each foot
Single flue, 9x9 in.	24
Single flue, 9x13 in.	28
Single flue, 9x17 in.	32
Single flue, 13x13 in.	32
Double flue, 1 flue 9x9 in., 1 flue 9x13 in.	44
Double flue, each 9x13 in.	48
Triple flue, 1 flue 13x13 in., 2 each 9x13 in.	68

The above figures are based on ½ inch mortar joints, using bricks of average size.

Determining Coal Bin Capacity

The capacity of a coal bin in tons can be determined by the following method: Multiply the length, width and height (all in feet) together, and multiply that amount by 56 for hard coal and by 50 for soft coal. Divide by 2,000 and the result will be the number of tons a coal bin will hold.

Capacity of Corn Cribs
(DRY CORN — HEIGHT, 10 FEET)

Width, Feet	LENGTH—FEET													
	½	1	12	14	16	18	20	22	24	28	32	36	48	64
6	13	27	320	373	427	480	533	587	640	747	853	960	1280	1707
6¼	13	28	333	389	444	500	556	611	667	778	889	1000	1333	1777
6½	14	29	347	404	462	520	578	636	693	809	924	1040	1387	1849
6¾	15	30	360	420	480	540	600	660	720	840	960	1080	1440	1920
7	16	31	373	436	498	560	622	684	747	871	996	1120	1493	1991
7¼	16	32	387	451	516	580	644	709	773	902	1031	1160	1547	2062
7½	17	33	400	467	533	600	667	733	800	933	1067	1200	1600	2133
7¾	17	34	413	482	551	620	689	758	827	964	1102	1240	1653	2204
8	18	36	427	498	569	640	711	782	853	996	1138	1280	1707	2276
8½	19	38	453	529	604	680	756	831	907	1058	1209	1360	1813	2418
9	20	40	480	560	640	720	800	880	960	1120	1280	1440	1920	2560
10	22	44	533	622	711	800	889	978	1067	1244	1422	1600	2133	2844

The length is found at top of table, the width in left-hand column—the height being taken at 10 ft. Thus, a crib 24 ft. long, 7½ ft. wide and 10 ft. high, will hold 800 bushels of ear corn, reckoning 2¼ cubic feet to hold a bushel. If not 10 feet high, multiply by the given height and cut off right-hand figure. If above crib were only 7 ft. high, it would hold 800 x 7, equals 560 (0.) bu., etc. The same space will hold 1½ times as much grain as ear corn. Thus, a crib that holds 800 bushels of ear corn will hold 800 x 1½ = 1440 bushels of grain.

Capacity of Circular Metal Corn Cribs

Capacity Shell Corn Bushels	Capacity Ear Corn Bushels	Diameter	Height
200	115	6'-4"	8'
325	187	8'-0"	8'
455	266	9'-6"	8'
570	327	9'-6"	10'
635	390	11'-2"	8'
785	475	11'-2"	10'
905	530	12'-0"	10'
1100	600	12'-9"	10'

Ear corn 4000 cu. in. per bushel of 70 pounds. Shell corn at 2150 cu. in. per bushel.

To Estimate Quantities of Grain and Hay

Bushels of Grain or Shelled Corn in Bin: Multiply the length by the width by the depth (all in feet) and divide by 1¼.

Bushels of Ear Corn in Crib: Multiply the length by the width by the average depth (all in feet) and multiply by 2/5. If the crib is round, multiply the distance around the crib by the diameter by the depth of the corn (all in feet) and divide by 10.

Tons of Hay in Mow: Multiply the length by the width by the height (all in feet) and divide by 400 to 500, depending on the kind of hay and how long it has been in the mow.

Tons of Hay in Stack: Multiply the overthrow (the distance from the ground on one side over the top of the stack to the ground on the other side) by the length by the width (all in feet); multiply by 3; divide by 10 and then divide by 500 to 600.

Capacity of Circular Grain Bins

Capacity Shell Corn Bushels	Diameter	Height
325	8'-0"	8'
455	9'-6"	8'
570	9'-6"	10'
635	11'-2"	8'
725	12'-0"	8'
950	13'-7"	8'
1200	16'-0"	8'
1500	16'-0"	10'

To Find Number of Bushels of Grain or Shelled Corn in a Bin or Wagon Box

Multiply the number of cubic feet (length x width x depth) by .8 to determine the number of bushels in a rectangular bin or box.

CAPACITY OF BOXES

- A box 24 x 24 x 14.7 inches will hold a barrel of 31½ gallons.
- A box 15 x 14 x 11 inches will hold 10 gallons.
- A box 8¼ x 7 x 4 inches will hold a gallon.
- A box 4 x 4 x 3.6 inches will hold a quart.
- A box 24 x 28 x 16 inches will hold five bushels.
- A box 16 x 12 x 11.2 inches will hold a bushel.
- A box 12 x 11.2 x 8 inches will hold a half-bushel.
- A box 7 x 6.4 x 12 inches will hold a peck.
- A box 8.4 x 8 x 4 inches will hold a peck, or four dry quarts.
- A box 6 x 5.6 x 4 inches deep will hold a half-gallon.

Storage Space Required for Farm Machinery

Type of Machine	Space Required Feet
5-foot Mower	6x8
6-foot Mower	7x8
12-ft. Sulky Rake	6x12
Sweep Rake	10x12
Hay Loader	9x10½
14-in. Walking Plow	2x7
16-in. Sulky Plow	3x9
Gang Plow (2 14-in.)	5x9
Tractor Plow (2 14-in.)	7½x12
2 Section Spike Tooth Harrow....	3x5
7-ft. Single Disc	8x4
7-ft. Tandem Disc	8x8
Rollers	8x3
Corn Planter	6x5
1-row Corn Cultivator	6x8
2-row Corn Cultivator	7½x7
2-row Rotary Hoe	8x 3
Corn Binder	9x 8
Silage Cutter	7x12
Endgate Seeder	6x12
10-hole Grain Drill	5x12
6-ft. Grain Binder	9x13
7-ft. Grain Binder	9x14
8-ft. Grain Binder	10x16
Wagon	7x14
Manure Spreader	8x14
Lime Spreader	3x 4
6-buhr Feed Grinder	3x 3
Gas Engine	3x 3
Tractor	7x12
Automobile	7x14
5-ft Combine	10x12
10-ft. Combine	12x15
12-ft. Combine	15x15

To Determine Capacity of Field Machines

The approximate capacity in acres per ten-hour day, of a field machine may be obtained by multiplying its effective width, in feet, by the average speed, in miles per hour, at which it is operated. To determine the average capacity per hour divide the figure thus obtained by ten.

Capacity of Silos

Depth of silage after settling 2 days	Inside diameter of silo in feet					
	10	12	14	16	18	20
(Feet)	Tons	Tons	Tons	Tons	Tons	Tons
2	2	2	3	4	5	6
4	3	5	7	9	11	13
6	5	8	11	14	17	21
8	8	11	15	20	25	31
10	10	15	20	26	33	41
12	13	19	25	33	42	52
14	16	23	31	41	52	64
15	18	25	34	45	57	70
16	19	28	38	49	62	77
17	21	30	41	53	67	83
18	23	32	44	58	73	90
19	24	35	48	62	79	97
20	26	38	51	67	85	105
21	28	40	55	72	91	112
22	30	43	59	77	97	120
23	32	46	63	82	103	128
24	34	49	66	87	110	135
25	36	52	70	92	116	143
26	38	55	74	97	123	152
27	40	58	79	103	130	160
28	42	61	83	108	137	169
29	44	64	87	114	144	178
30	47	67	91	119	151	187
31	49	70	96	125	158	195
32	51	74	100	131	166	205
33	53	77	105	138	173	214
34	56	80	109	143	181	224
35	58	84	114	149	188	232
36	61	87	118	155	196	242
37	63	90	123	161	204	252
38	66	94	128	167	212	262
39	68	97	133	174	221	272
40	70	101	138	180	229	280

Estimating the Amount of Silage**Remaining in Silo**

What is left in a silo after part has been used can be estimated as follows:

Find original amount of silage put in silo by referring to table. Find amount of silage that has been used by same method, using as depth the difference between present depth and depth two days after filling. Subtract amount used from original amount. The difference is approximate amount of silage remaining in silo.

Example: A silo 16' in diameter and 32' high was filled so that after settling two days there was 26' of silage. At time inventory was taken there was 12' of silage left. From the table it is seen that 26' of silage in a 16' silo = 97 tons. Since 12' of silage was left, 14' had been fed, and 14' of silage in a 16' silo = 41 tons. Therefore, the bottom 12' of silage in this silo would contain about 56 tons of silage, since 97 tons minus 41 tons = 56 tons.

Cornell University

Tank Capacity in Gallons

To determine the capacity of a tank in gallons, multiply the capacity in cubic feet by $7\frac{1}{2}$. One cubic foot of water weighs $62\frac{1}{2}$ pounds.

Daily Feeding From Silo

(Basis of 40 pounds of silage per cubic foot)

WINTER FEEDING TO A DEPTH OF TWO INCHES DAILY

Inside diameter of silo (feet)	Numbers of animals that may be fed, allowing—			
	40 lbs. per head	30 lbs. per head	20 lbs. per head	15 lbs. per head
10	13	17	26	35
11	16	21	31	42
12	19	25	37	50
13	22	29	44	59
14	25	34	51	68
15	29	39	59	78
16	33	44	67	89
17	38	50	75	101
18	42	56	85	113
20	52	70	104	139

SUMMER FEEDING TO A DEPTH OF THREE INCHES DAILY

10	19	26	39	52
11	23	31	47	63
12	28	37	56	75
13	33	44	66	88
14	38	51	77	102
15	44	59	88	118
16	50	67	100	134

Silo Information

Dimensions	Capacity in Tons	Acres to fill—15 Tons to Acre	Cows it will keep 5 months, 40 lbs. feed per day
10 x 20	28	3	8
12 x 20	40	3	11
12 x 24	49	$3\frac{2}{5}$	13
12 x 28	60	4	15
14 x 22	61	$4\frac{1}{2}$	17
14 x 24	67	$4\frac{2}{3}$	19
14 x 28	83	$5\frac{2}{3}$	22
14 x 30	93	6	23
16 x 24	87	$6\frac{2}{5}$	24
16 x 26	97	7	26
16 x 30	119	8	30
18 x 30	151	$10\frac{1}{5}$	37
18 x 36	189	$12\frac{1}{3}$	45

Contents of Fields and Lots

10 rods x 16	rods = 1 acre
8 rods x 20	rods = 1 acre
5 rods x 32	rods = 1 acre
4 rods x 40	rods = 1 acre
5 yds. x 968	yds. = 1 acre
10 yds. x 484	yds. = 1 acre
20 yds. x 242	yds. = 1 acre
40 yds. x 121	yds. = 1 acre
70 yds. x $69\frac{1}{7}$	yds. = 1 acre
80 yds. x $60\frac{1}{2}$	yds. = 1 acre
220 feet x 198	feet = 1 acre
440 feet x 99	feet = 1 acre
240 feet x $181\frac{1}{2}$	feet = 1 acre
120 feet x 363	feet = 1 acre
110 feet x 396	feet = 1 acre
60 feet x 726	feet = 1 acre
200 feet x $108\frac{9}{10}$	feet = $\frac{1}{2}$ acre
100 feet x $145\frac{2}{10}$	feet = $\frac{1}{3}$ acre
100 feet x $108\frac{9}{10}$	feet = $\frac{1}{4}$ acre

U. S. Government Land Measure

A township—36 sections, each a mile square.

A section—640 acres.

A quarter section—half a mile square, 160 acres.

An eighth section, half a mile long, north and south, and a quarter of a mile wide—80 acres.

A sixteenth section, a quarter of a mile square—40 acres.

The sections are all numbered 1 to 36, commencing at the northeast corner.

The sections are divided into quarters, which are named by the cardinal points. The quarters are divided in the same way. The description of a forty-acre lot would read: the south half of the west half of the southwest quarter of section 1 in township 24, north of range 7 west, or, as the case might be, and sometimes will fall short and sometimes overrun the number of acres it is supposed to contain.

NOTE—In most of the Western states, where all of the land was laid out by the Government, all titles, except in city lots, are passed by description, as under the Government survey, and there a square of 6 miles, or 36 square miles, is one township.

To Find Number of Acres in a Field

To find the number of acres in a body of land, multiply the length by the width (in rods) and divide the product by 160. When the opposite sides are unequal, add them, and take half the sum for the mean length or width.

Globular Measure

To find the surface of a globe, multiply the square of the diameter by 3.1416.

To find the volume of a globe, multiply the cube of the diameter by .5236.

To Find Height of Tree or Building

Set up a stick and measure its shadow. Measure length of shadow of tree. Length of shadow of tree, times height of stick divided by length of shadow of stick equals height of tree.

To Find Contents of a Cordwood Pile

To find the contents of a pile of cordwood, multiply the length, width and height together and divide the product by 128. This will give you the number of cords.

Capacities of Cylindrical Tanks

Tank Diam. In.	Two Bumped Heads Gal.	2 in. of Length Gal.	1 Foot of Length Gal.
12	0.80	0.81	4.9
14	1.20	1.10	6.6
16	2.02	1.50	9.0
18	2.65	1.83	11.0
20	3.17	2.25	13.5
22	4.96	2.73	16.4
24	6.73	3.25	19.5
30	18.18	5.08	30.5
36	23.26	7.28	43.7
42	34.00	10.00	60.0
48	51.61	13.00	78.0
54	74.50	16.16	97.0
60	105.00	20.50	123.0
66	133.50	24.33	148.0
72	175.0	29.33	176.0
78	227.0	34.16	205.0
84	285.0	40.00	240.0
96	415.0	50.83	305.0
108	600.0	65.67	394.0
120	815.0	81.67	490.0
132	1073.0	98.33	590.0
144	1400.0	100.00	700.0

To Find Capacity of a Cylindrical Tank in Gallons

To find the capacity of cylindrical tanks, square the diameter in inches, multiply by the height in inches, and this product by the decimal .34. Point off four decimals and you have the capacity in gallons.

Capacity of Cisterns in Barrels

Each Foot in Depth of a Circular Cistern

5 ft. in diam. holds	4.66 bbls.
6 ft. in diam. holds	6.71 bbls.
7 ft. in diam. holds	9.13 bbls.
8 ft. in diam. holds	11.93 bbls.
9 ft. in diam. holds	15.10 bbls.
10 ft. in diam. holds	18.65 bbls.

Each Foot in Depth of a Square Cistern

5 ft. x 5 ft. holds	5.92 bbls.
6 ft. x 6 ft. holds	8.54 bbls.
7 ft. x 7 ft. holds	11.63 bbls.
8 ft. x 8 ft. holds	15.19 bbls.
9 ft. x 9 ft. holds	19.39 bbls.
10 ft. x 10 ft. holds	23.74 bbls.

To Find the Capacity of a Square Tank in Gallons

Rule—Multiply the area of the bottom by the height in order to secure the cubic feet. Multiply the cubic feet by $7\frac{1}{2}$ (exact 7.48) and the result will be the number of gallons. For the contents in barrels, multiply the cubic feet by .2375.

Relation of Diameter to Capacity of Pipe

Doubling the diameter of a pipe or cylindrical vessel increases its capacity four times.

Calculating Number of Gallons in a Partially Filled Horizontal Cylindrical Tank

H=depth (in hundredths of the diameter) of the liquid.

P=portion of the total tank capacity represented by the liquid.

"H"	"P"	"H"	"P"	"H"	"P"
0.01	0.002	0.35	0.312	0.68	0.725
0.02	0.005			0.69	0.738
0.03	0.008	0.36	0.323	0.70	0.748
0.04	0.014	0.37	0.336		
0.05	0.018	0.38	0.348	0.71	0.760
		0.39	0.361	0.72	0.772
0.06	0.021	0.40	0.373	0.73	0.783
0.07	0.030			0.74	0.794
0.08	0.037	0.41	0.385	0.75	0.805
0.09	0.044	0.42	0.398		
0.10	0.052	0.43	0.409	0.76	0.816
		0.44	0.422	0.77	0.827
0.11	0.060	0.45	0.436	0.78	0.837
0.12	0.068			0.79	0.848
0.13	0.076	0.46	0.448	0.80	0.858
0.14	0.086	0.47	0.460		
0.15	0.093	0.48	0.472	0.81	0.868
		0.49	0.486	0.82	0.878
0.16	0.103	0.50	0.500	0.83	0.887
0.17	0.113			0.84	0.897
0.18	0.122	0.51	0.514	0.85	0.907
0.19	0.132	0.52	0.528		
0.20	0.142	0.53	0.540	0.86	0.914
		0.54	0.552	0.87	0.924
0.21	0.152	0.55	0.564	0.88	0.932
0.22	0.163			0.89	0.940
0.23	0.173	0.56	0.578	0.90	0.948
0.24	0.184	0.57	0.591		
0.25	0.195	0.58	0.602	0.91	0.956
		0.59	0.615	0.92	0.963
0.26	0.206	0.60	0.627	0.93	0.970
0.27	0.217			0.94	0.979
0.28	0.228	0.61	0.639	0.95	0.982
0.29	0.240	0.62	0.652		
0.30	0.252	0.63	0.664	0.96	0.986
		0.64	0.677	0.97	0.992
0.31	0.262	0.65	0.688	0.98	0.995
0.32	0.275			0.99	0.998
0.33	0.287	0.66	0.701	1.00	1.000
0.34	0.299	0.67	0.711		

Example: Water is 24 inches deep in a horizontal tank 30 inches in diameter and 4 feet long, having a capacity of 122 gallons.

$$H = \frac{\text{depth of liquid}}{\text{diameter}} = \frac{24}{30} = .80$$

For .80, P = 0.858

Multiplying 122 gallons by .858 gives 104.676 gallons—the amount of water in the tank when it is filled to a depth of 24 inches.

Bushels Per Ton of Various Grains

Grain	Weight per bushel (lbs.)	Bushels in one ton
Barley	48	41.67
Beans	60	33.33
Peas	60	33.33
Wheat	60	33.33
Corn	56	35.71
Flaxseed	56	35.71
Wrinkled Peas	56	35.71
Rye	56	35.71
Buckwheat	50	40
Millet Seed	50	40
Oats	32	62.5

Daily Capacity of Farm Machines

The amount of work accomplished by an individual machine depends upon its width, speed of travel, and period of operation. The following table gives some values for the more common machines in operation and the chart provides a means of calculating approximate acreages covered during a ten-hour day.

Implement	Size	Acres per 10-hr. day	Rate of Travel M.P.H.
Grain Machines			
Binder	8 ft.	28	3
Binder (tractor)	10 ft.	38	3
Header	12 ft.	43	3
Harvester-thresher (with aux. engine)	10 ft.	36	3
Harvester-thresher	12 ft.	43	3
Windrow-harvester	12 ft.	43	3
Haying Machines			
Mower	7 ft.	33	4
Side rake & tedder	87 in.	34	4
Corn Machines 42 in. rows			
Planter	2 row	20	3
Planter	4 row	46	3
Lister	2 row	20	3
Cultivator	2 row	33	4
Cultivator	4 row	65	4
Corn binder	1 row	9	3
Corn picker	1 row	8	2½
Corn picker	2 row	15	2½
Seeding Machines			
Grain drill	10 ft.	36	3
Grain drill	14 ft.	50	3
Plow press drill	5 ft.	16	3
Tillage Implements			
Tractor plow	2-14"	8	3
Tractor plow	3-14"	12	3
Tractor plow	4-14"	16	3
Rod weeder	12 ft.	40	3
Disk harrow	10 ft. tandem	33	3
Peg tooth harrow	20 ft. (4 sec.)	70	3
Springtooth harrow	11 ft. (4 sec.)	40	3
Field cultivator	12 ft.	40	3
Rotary hoe	7 ft.	25	3
One-way disk plow	8 ft.	29	3
One-way disk plow	6 ft.	21	3

Acreage per Mile of Various Widths

Width	Acres per Mile	Width	Acres per Mile
1 foot	0.121	15 feet	1.815
5 feet	0.605	16 feet	1.936
8 feet	0.968	18 feet	2.178
10 feet	1.21	20 feet	2.42
12 feet	1.452	24 feet	2.904
14 feet	1.694	25 feet	3.025

Acre Yields Required to Equal the Weight of 50 Bushels of Corn (2800 lb.)

Barley	58.33 bushels
Beans, peas or wheat	46.67 bushels
Flaxseed, wrinkled pease, rye	50 bushels
Buckwheat, millet seed	56 bushels
Oats	87.5 bushels

Plowing Accomplished With Tractor in 10-Hour Day, at Various Speeds

ACRES PLOWED

Speed Miles Per Hr.	Two 12" Plows	Two 14" Plows	Two 16" Plows
1 7/8	4.52	5.28	6.04
2	4.84	5.64	6.46
2 1/4	5.45	6.35	7.27
2 1/2	6.05	7.05	8.07

Miles Traveled in Plowing an Acre

Width of Furrow, Inches	Miles
10	9-9/10
11	9
12	8-1/4
13	7-1/2
14	7
15	6-1/2
16	6-1/6

Acres Planted in Traveling One Mile 3'-6" Rows

1-Row Planter	.42 acres
2-Row Planter	.84 acres
3-Row Planter	1.26 acres

There are 10,667 stalks in an acre planted in 3'-6" rows, three stalks to the hill, hills 3'-6" apart, or drilled one stalk every 14 inches.

There are 3,556 hills in an acre planted in 3'-6" rows, hills 3'-6" apart.

Miles Traveled in Planting an Acre 3'-6" Rows

1-Row Planter	2.34 miles
2-Row Planter	1.17 miles
3-Row Planter	.78 miles

To Determine Water Pressure

To find the pressure in pounds per square inch, of a column of water, multiply the height of the column, in feet, by .434.

Recommended Air Pressures for Tires Used on Farm Tractors

FRONT TIRES—ALL SIZES

1. 4-Ply Tires	28 lbs.
2. 6-Ply Tires	36 lbs.

REAR TIRES—ALL SIZES

- Minimum Inflation Pressure 12 lbs.
- When plowing, increase pressure in tire on furrow wheel by 4 lbs.
- When special heavy wheels are used, or heavy implements such as corn pickers, bedders, etc., are carried on the tractor, inflation pressure must be increased. See Tire & Rim Association schedule or contact the tractor dealer or manufacturer.

Table of Live and Dressed Weights for Poultry, Hogs and Cattle

HOGS (chilled carcass)

	In Lbs.	Per-Cent
Prime heavy hogs	350-400	82-84
Heavy butchers	280-350	80-82
Medium butchers	220-280	78-80
Light butchers	180-220	77-79
Heavy packing	300-500	81-83
Medium packing	250-300	79-80
Light packing	200-280	77-78
Bacon hogs	160-220	76-77
Light mixed	150-220	75-76
Extra light	125-150	74-75
Shipper hogs	100-200	72-76

SHEEP

Wide range	40-65
Average lambs	48-52

CATTLE

	Per-Cent
Thin cattle (dairy cows)	40-50
Barely warmed steers	50-55
Good conditioned steers	55-60
Prime cattle—long fed steers	60-up
Average for cattle	55

Example—a steer in good condition that weighs 1600 pounds, will dress out at 880 to 960 pounds.

CHICKENS

	Dressing Per-cent	Trussing Per-cent
Cocks	92	76
Cockerels	89	74
Hens	92	76
Pullets	92	74

Truck Tire Capacities and Recommended Air Pressures HIGH PRESSURE TIRES

Tire Size	Load Capacity Per Tire	Rim Size	No. of Piles	Inflation Pressure	Diameter
30 x 5	1700	5"	8	50	32.9
32 x 6	1950	5"	8	65	33.9
32 x 6	2250	6"	10	70	35.1
34 x 7	2700	7"	10	75	36.5

BALLOON TIRES

Tire Size	Load Capacity Per Tire	Rim Size	No. of Piles	Inflation Pressure	Diameter
6.00/16	915	4.50	4	28	28.4
6.50/16	1050	4.50	4	28	29.1
7.00/16	1145	4.50	4	26	30.3
6.00/17	1250	5	6	50	29.9
6.50/17	1500	5	6	50	31.1
7.00/17	1725	6	8	55	32.2
7.50/17	2000	6	8	55	33.5
7.00/18	1800	6	8	55	33.3
7.50/18	2025	7	8	55	34.6
6.00/20	1400	5	6	50	32.9
6.50/20	1700	5	6	50	34.1
7.00/20	1950	6	8	55	35.2
7.50/20	2250	7	8	55	36.5
8.25/20	2750	7	10	60	37.9

Weights of Farm Products

(Pounds per Cubic Foot)

The table below is given for reference in determining safe quantities of various farm products which may be stored in a structure.

Commodity	Weight
Alfalfa Seed	48
Apples	40
Barley	40
Clover Seed	48
Cornmeal	40
Cottonseed	27
Baled Hay	15
Loose Hay	4
Ice	57
Oats	27
Potatoes	48
Shelled Corn	47

Motor Sizes and Types

	Motor sizes		Motor type—See above
	Horse-power	Most used	
Cream separator	1/6 to 1/4	1/6	3 or 5
Washing machine	1/6 to 1/4	1/4	1
Fanning mill	1/4 to 1/2	1/4	4
Fruit and vegetable graders	1/4 to 1/2	1/4	4
Sausage grinder	1/4 to 1/2	1/4	4
Milking machine	1/4 to 1	1/3 to 1/2	4
Corn sheller (1 hole)	1/4 to 1/3	1/4	4
Small concrete mixer	1/4 to 1/2	1/2	4
Emery wheel	1/4 to 3/4	1/4	4
Feed grinder	1 to 10	5	4
Grain elevator	2 to 5	3	4
Ensilage cutter	5 to 10	7-1/2	4
Hay hoist	3 to 10	5	4
Feed mixer	3 to 7-1/2	5	4
Wood saw	5 to 7-1/2	5	4
Churn	1/6 to 1/4	1/4	4
Pump jack	1/4 to 1/2	1/3	4
Drill press	1/8 to 1/2	1/4	4

From Bulletin P13 (New Series) Iowa State College.

Approximate Capacity of Cylindrical Silos, for Well-Matured Corn Silage, in Tons

Depth of Silo, Ft.	INSIDE DIAMETER OF SILO, FEET															
	10	12	14	15	16	18	20	21	22	23	24					
20	26	38	51	59	67	85	105	115	127	138	151					
21	28	40	55	63	72	91	112	123	135	148	161					
22	30	43	59	67	77	97	120	132	145	158	172					
23	32	46	62	72	82	103	128	141	154	169	184					
24	34	49	66	76	87	110	135	149	164	179	195					
25	36	52	70	81	90	116	143	158	174	190	206					
26	38	55	74	85	97	123	152	168	184	201	219					
27	40	58	78	90	103	130	160	177	194	212	231					
28	42	61	83	95	108	137	169	186	204	223	243					
29	45	64	88	100	114	144	178	196	215	235	265					
30	47	68	93	105	119	151	187	206	226	247	269					
31	49	70	96	110	125	158	195	215	236	258	282					
32	51	73	101	115	131	166	205	226	258	271	295					

Dried Fruit and Vegetable Yields

	Fresh Weight	Dried Yield
Apples	12 lb.	1 1/4 lb. (3 pt.)
Beans, lima	7 lb.	1 1/4 lb. (2 pt.)
Beans, Snap	6 lb.	1 1/2 lb. (2 1/2 pt.)
Beets	15 lb.	1 1/2 lb. (3 to 5 pt.)
Broccoli	12 lb.	1 1/2 lb. (12 to 15 pt.)
Carrots	15 lb.	1 1/4 lb. (2 to 4 pt.)
Celery	12 lb.	3/4 lb. (3 1/2 to 4 pt.)
Corn	18 lb.	2 1/2 lb. (4 to 4 1/2 pt.)
Greens	3 lb.	1/4 lb. (5 1/2 pt.)
Onions	12 lb.	1 1/2 lb. (11 1/2 pt. sliced) 4 1/2 pt. shredded)
Peaches	12 lb.	1 1/2 lb. (2 to 3 pt.)
Pears	14 lb.	1 1/2 lb. (3 pt.)
Peas	8 lb.	3/4 lb. (1 pt.)
Pumpkin	11 lb.	3/4 lb. (3 1/2 pt.)
Squash	10 lb.	3/4 lb. (5 pt.)

Table prepared by Colorado Extension Service.

Only Republic Steel Uses Electro-Galvanizing Process for Improved Midwest Fencing

When Republic Steel moved into the Midwest to sell the products of its Wire Mill, they had to have something that would make farmers sit up and take notice. It couldn't be accomplished merely through ballyhoo. A far superior product was the answer. The greatest improvement in farm fence would be a product that was electro-galvanized.

Republic Steel increased their coating costs considerably to secure a zinc that would be far superior to the average western zinc spelter. The added cost resulted in the best coating commercially possible.

Uniform Coating

Republic Fence not only is "Coated to Stay the Electric Way", but this improved electrical method applies a heavy zinc coating at all points, without thin spots at any point. Still more important, the electrical method is the *only* method that can be depended upon to apply a zinc coating of uniform thickness at all points and at all times. The importance of this feature is fully realized when it is remembered that no zinc coating lasts longer than its thinnest point. The more uniform zinc coating, applied to steel wire of high strength, gives maximum corrosion resistance.

And that added corrosion resistance means savings and economy to you. Fence that can stand up and "take it" year after year need not be serviced or replaced as frequently. Savings in dollars and time are yours with Republic Fence.

New Process

The Republic electrical method of zinc coating fence is in no sense merely an improvement over old types. It is new and different, unquestionably better. That's why Republic Fence assures protection to crops and livestock for many added years and at much lower cost per year. It is also why it assures useful service long after ordinary fence has become pitted and pock marked from rust, and weakened beyond repair.

Old Theory

The electrical method of coating fence wire is almost as old as science itself. The fruits of the labors of such

men as Nicholson, Carlisle, Faraday and Phillips are incorporated in this improved method. The celebrated Galvani after whom the galvanizing process is named, earned his greatest fame in developing the galvanic battery. His earliest galvanizing process was an electrical process.

It remained for Republic, however, to make the work of these men practical for the vitally important job of zinc coating fence wire. Republic has spent millions of dollars to make the benefits of this electrical method available to fence users.

Many Layers

In brushing aside old methods of coating fence wire with zinc and in perfecting a new electrical method, Republic achieved important improvements.

For instance, when examined under a powerful microscope, this new kind of zinc coating is seen to be formed of numerous layers or plies which make it tougher and stronger than a single coating, just as a laminated piece of wood is tougher and stronger for its thickness than a single ply of wood. Or, just as several lighter coats of paint give better protection than a single heavier coat, to your automobile or farm buildings.

Many Tests

In the development of its electro-galvanized fencing, Republic subjected its product to every kind of test. They had to develop a coating that was tougher than any heretofore applied to fencing. Cross sections of the Republic fence showed that the numerous zinc coatings had been knitted to each other, thus gradually building up electrically, atom by atom, a super quality coating of zinc so pure that it was amazingly tough, pliable, adhesive and resistant to corrosion. It was a coating that would not crack, flake or peel off.

But a demonstration test was necessary to prove this new coating to the farm trade, customers who just had to be shown. So a series of tests were devised that could be put into the brief cases of Republic salesmen. Among these was the break test. In this demonstration, a piece of Republic fence wire is broken completely apart, leaving only one small

tip of coating to hold the two pieces together. The break is shown to the customer through a powerful magnifying glass and the customer sees for himself that this thin coating of pure zinc is strong enough to act as a hinge for the two pieces of wire. Needless to say, the customers were convinced.

Another customer test was the acid test in which Republic wire and other wire were subjected to a dip into a beaker of acid. In the case of inferior coatings the acid immediately attacked the impure zinc and was not noticeable on the Republic wire coating.

Eight Points

It isn't just an accident that Republic's electro-galvanized fencing is so superior. There are eight good reasons why, and you should know what they are:

1. The electro-galvanizing process applies a thick, heavy coat of pure zinc. This provides more protection and better protection.

2. The pure zinc coating is more uniform, uniform in thickness at all points at all times. Only electro-galvanizing provides this absolutely uniform coating.

3. Electro-galvanizing stays on. Pure zinc is perfectly bonded to the steel. Layers and layers of pure zinc form the thick protective coating, and built up layer upon layer they will not chip, flake or peel.

4. Electro-galvanizing applies the purest zinc coating commercially possible—99.99% pure. This pure zinc coating is very ductile, is not brittle or fragile and will withstand severe punishment.

5. Electro-galvanizing is actually electro-plating with pure zinc.

6. It actually costs you less; there is little or no extra first cost and longer service makes cost per year much less.

7. It's tougher and more pliable. There are no thin spots, no weak points. It will take much more punishment, wear and weathering.

8. It reduces labor cost. About half the cost of building fence is labor. Longer life of electro-galvanized fence means labor costs are proportionally reduced. Maintenance is kept to the minimum.

Partners in Business

The American Farmer — The Republic Dealer!

The perfect picture of Free Enterprise at work. They have come closer and closer together through the years. Their individual problems belong to each other. They meet and solve their problems together.

American Farmers always have been faithful guardians of this country's way of life. Always, they have been staunch champions of our particular brand of free thought—free speech—free enterprise.

In the same way, Republic Dealers are solid, substantial citizens. They lend their full weight to every worthwhile community project. They protect jealously their birthright of Opportunity.

These partners realize that the Free Enterprise system requires each generation to win and defend its right to life, liberty and the pursuit of happiness. They know it isn't possible to sit back and enjoy the freedom our grandfathers and their forebears won and fought to keep.

In giving you this booklet, your local Republic Dealer is continuing his policy of aiding you to do a better job in your business of farming.

REPUBLIC STEEL CORPORATION
(WIRE DIVISION)

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